WAPELLO/MAHASKA/KEOKUK COUNTY
HMA Resurfacing/Heater Scarification
STP-149-1(100)--2C-90

LETTING DATE
DEC 15 2026

IOWA DOT

REVISIONS

TOTAL
42
PROJECT IDENTIFICATION NUMBER
24-90-149-010
PROJECT NUMBER
STP-149-1(100)--2C-90
R.O.W. PROJECT NUMBER

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WAPELLO/MAHASKA/KEOKUK COUNTY

HMA Resurfacing/Heater Scarification

Approx. 1.1 mi N of US 63 to 0.4 mi S of IA 23

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.13 of the Specifications.

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 9	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1 - 3	Estimated Project Quantities and Reference Information
C.4	Standard Road Plans
C.4	Index of Tabulations
C.4	General Notes
C.5 - 15	Tabulations
CS Sheets	**Soils Tabulations**
CS.1 - 2	Soils Tabulations
D Sheets	**Mainline Plan and Profile Sheets**
D.1 - 5	IA 149 Plan Sheets
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.1	511 Travel Restriction
J.1	Staging Notes
J.1	Coordinated Operations
R Sheets	**Erosion Control Sheets**
RC.1 - 5	Est. Quantities, PPP, General Notes and Tabulations
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
U.1	Modified Standard Road Plan, PR-201
U.2	Modified Standard Road Plan, PR-202
U.3	IA 149 and IA 23 Intersection Pavement Markings Layout

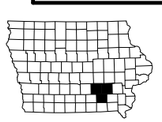
For Project Location Map
Refer to Sheet No. A.02

Scan the QR code or click the link below to leave plan quality feedback and help us improve future projects.

Design QR Feedback Link

KEOKUK COUNTY DESIGN DATA RURAL			
2025	AADT	3002	V.P.D.
2045	AADT	3150	V.P.D.
2045	DHV	330	V.P.H.
TRUCKS		11	%
Total Design ESALs		993,480	

WAPELLO COUNTY DESIGN DATA RURAL			
2025	AADT	3002	V.P.D.
2045	AADT	3150	V.P.D.
2045	DHV	330	V.P.H.
TRUCKS		11	%
Total Design ESALs		993,480	



INDEX OF SEALS

SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Kyle T. Schrock	Primary Signature Block	C.1-3
CS.1	Mark A. Dell	Geotechnical Design	CS.1-2
RC.1	Rachel A. Harris	Landscape Design	RC.2

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
Kyle T. Schrock
27584
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Kyle Schrock
Signature
10-01-2026
Date
Kyle T. Schrock
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1-A.2, B.1-B.9, C.1-C.15, D.1-D.5, J.1, U.1-U.3

FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER A.1

4:03:43 PM 10/1/2026 wmcnama pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9014901024\Design\CADD_Files\Sheet_Files\SHT_90149100Z12_A01.dgn

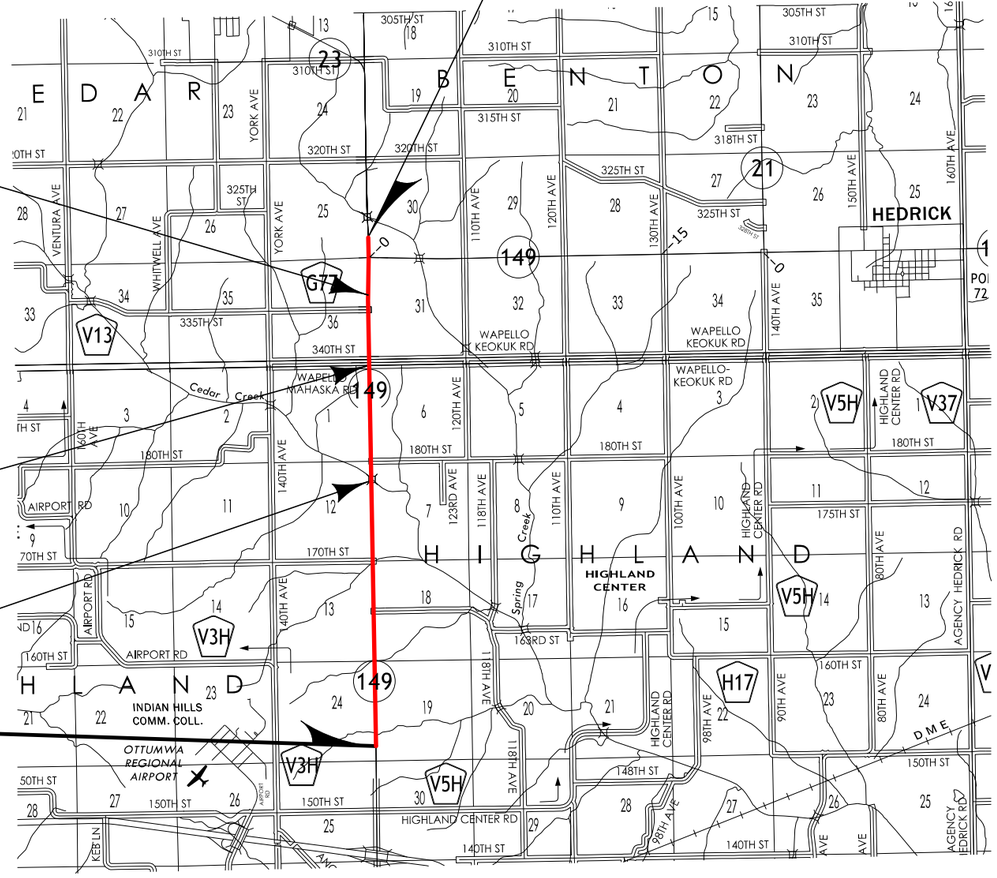
END PROJECT
STA. 2018+16
REF. LOC. 0.20

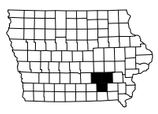
STATION EQUATION
821+42.60 (BK) = 1985+47.32 (AH)

STATION EQUATION
1553+24.20 (BK) = 853+04.90 (AH)

FHWA #050691
MAINT #9009.9S149

BEGIN PROJECT
STA. 1349+45
REF. LOC. 7.12





LOCATION MAP SCALE
0 1 2 3
Miles

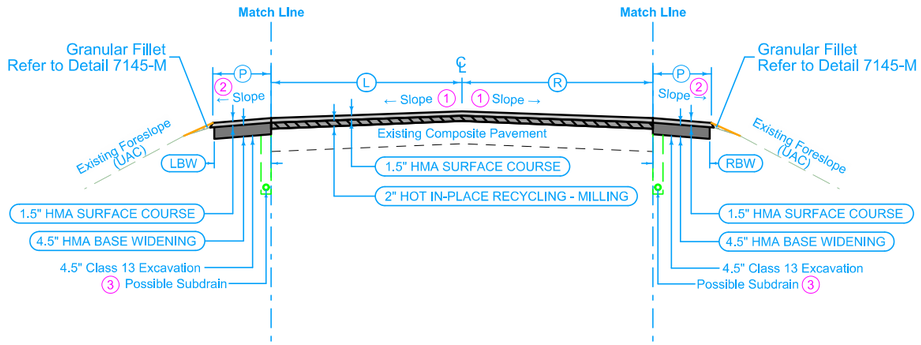
FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER A.2

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Paved Shoulder with Granular Fillet

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(LBW) Feet
1349+45	1486+40	4	4
1501+57	1553+24.20 (E1)	4	4
853+04.90 (E1)	852+20	4	4

STATION EQUATION (E1) 1553+24.20 (BK) = 853+04.90 (AH)



3R_MillingOverlay_ MODIFIED				
STATION TO STATION		(L) Feet	(R) Feet	Remarks
1349+45	1486+40	12	12	
1501+57	1553+24.20 (E1)	12	12	
853+04.90 (E1)	852+20	12	12	

STATION EQUATION (E1) 1553+24.20 (BK) = 853+04.90 (AH)

Paved Shoulder with Granular Fillet

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(RBW) Feet
1349+45	1486+40	4	4
1501+57	1553+24.20 (E1)	4	4
853+04.90 (E1)	852+20	4	4

STATION EQUATION (E1) 1553+24.20 (BK) = 853+04.90 (AH)

(1) Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.

(2) Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.

(3) UAC existing subdrain. All subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-09A on CS Sheets for proposed locations).

General Notes:

1. Section and Stationing is shown in the Direction of NB Traffic.
2. Stationing on typical sections does not include gapping for paved sideroads and paved entrances. Refer to Details.
3. See Tab 100-25 for Pavement quantities.
4. See Tab 106-5 for Base Widening quantities.
5. See Tab 112-9 for Granular Shoulder quantities.

IA 149 Mainline Hot In-Place Recycling, HMA Resurfacing, and Paved Shoulders

(Beginning of Project to Area around Bridge FHWA 50691 at MP 9.9)
(From Area around Bridge FHWA 50691 at MP 9.9 to Wapello / Mahaska/ Keokuk County Line)

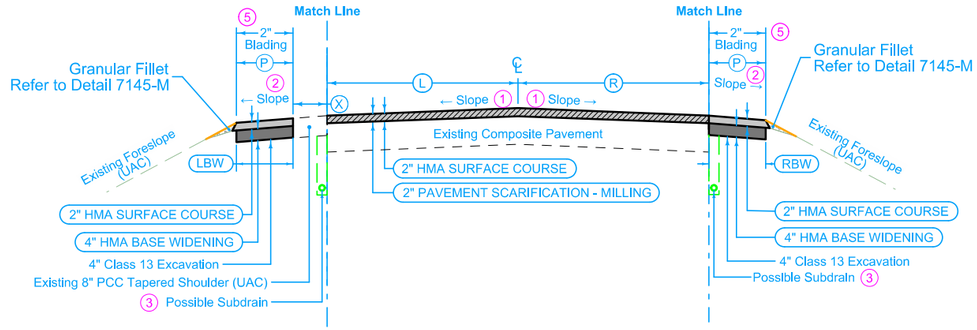
FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER B.1	

Paved Shoulder with Granular Fillet

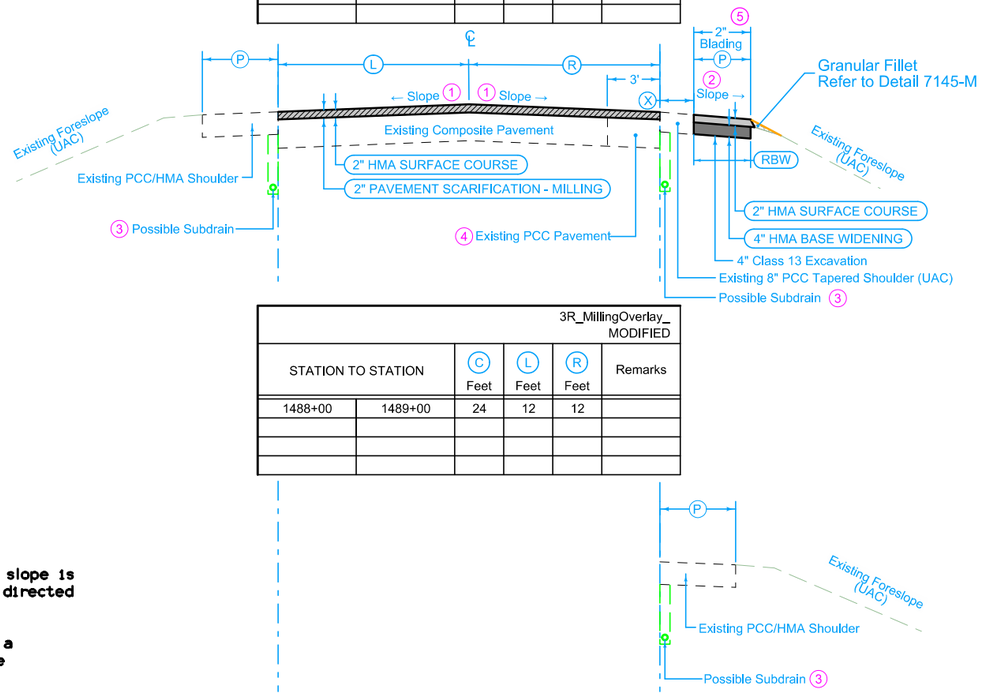
3R_Shldr_C_Overlay_ Modified				
STATION TO STATION		(X) Feet	(P) Feet	(LBW) Feet
1486+40	1486+65	2-4	4	4
1501+38	1501+57	4-2	4	4

Existing PCC Shoulder (UAC)

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(G) Feet
1486+65	1489+00	UAC	UAC
1499+57	1501+38	UAC	UAC



3R_MillingOverlay_ MODIFIED					
STATION TO STATION		(C) Feet	(L) Feet	(R) Feet	Remarks
1486+40	1488+00	24	12	12	
1499+57	1501+57	24	12	12	



3R_MillingOverlay_ MODIFIED					
STATION TO STATION		(C) Feet	(L) Feet	(R) Feet	Remarks
1488+00	1489+00	24	12	12	

Paved Shoulder with Granular Fillet

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(RBW) Feet
1486+40	1488+00	4	4
1500+35	1501+57	4	4

Paved Shoulder with Granular Fillet

3R_Shldr_C_Overlay_ Modified				
STATION TO STATION		(X) Feet	(P) Feet	(RBW) Feet
1488+00	1488+25	2-4	4	4
1500+15.50	1500+35	4-2	4	4

Existing PCC Shoulder (UAC)

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(G) Feet
1488+25	1489+00	UAC	UAC
1499+57	1500+15.50	UAC	UAC

(1) Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.

(2) Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.

(3) UAC existing subdrain. All subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-09A on CS Sheets for proposed locations).

(4) The 3' width existing PCC in the traveled lane will be milled 2" and 2" of HMA Surface Course will be placed.

(5) Blade the existing granular shoulder material away from the pavement prior to the pavement scarification operation. Blading shall create a 4% temporary granular shoulder to prevent drainage runoff problems during construction. Positive drainage shall be maintained.

General Notes:

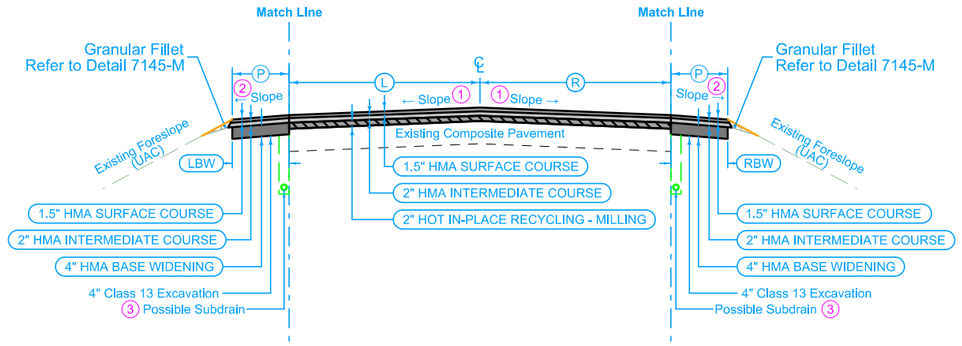
1. Section and Stationing is shown in the Direction of NB Traffic.
2. Stationing on typical sections does not include gapping for paved sideroads and paved entrances. Refer to Details.
3. See Tab 100-25 for Pavement quantities.
4. See Tab 106-5 for Base Widening quantities.
5. See Tab 112-9 for Granular Shoulder quantities.

IA 149 Mainline HMA Resurfacing and Paved Shoulders

(Area around Bridge FHWA 50691 at MP 9.9)

Paved Shoulder with Granular Fillet

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(LBW) Feet
852+20	821+55	4	4



3R_MillingOverlay_ MODIFIED				
STATION TO STATION		(L) Feet	(R) Feet	Remarks
852+20	821+55	12	12	

Paved Shoulder with Granular Fillet

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(RBW) Feet
852+20	821+55	4	4

(1) Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.

(2) Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.

(3) UAC existing subdrain. All subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-09A on CS Sheets for proposed locations).

General Notes:

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2. Stationing on typical sections does not include gapping for paved sideroads and paved entrances. Refer to Details.
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4. See Tab 106-5 for Base Widening quantities.
5. See Tab 112-9 for Granular Shoulder quantities.

IA 149 Mainline Hot In-Place Recycling, HMA Resurfacing Pavement, & Paved Shoulders

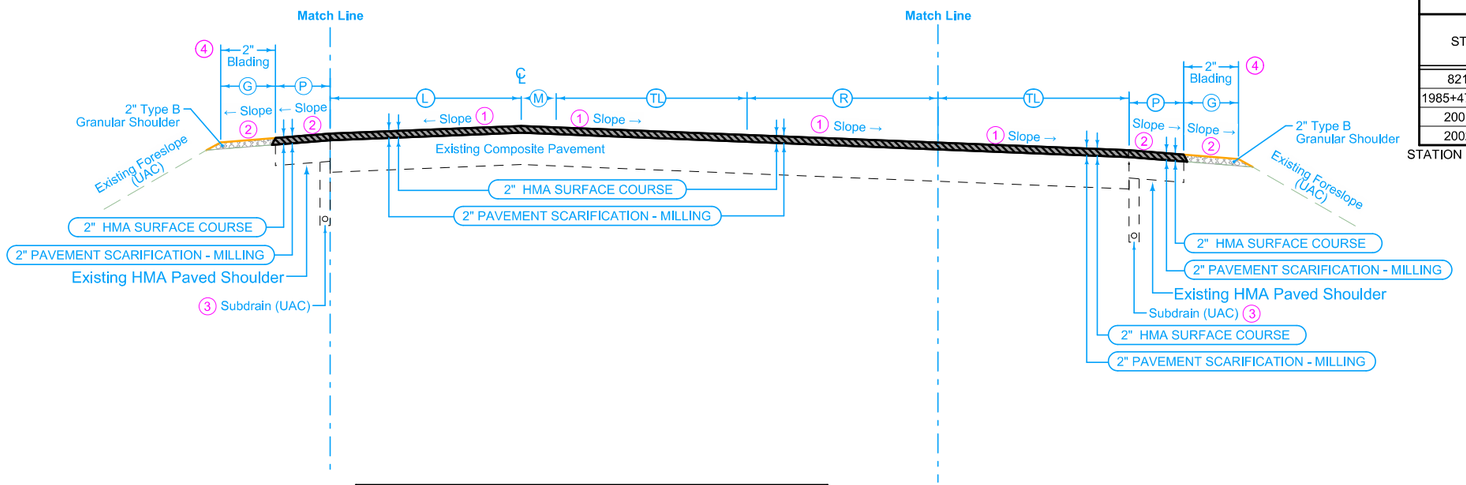
(From Wapello / Mahaska / Keokuk County line to IA 149/IA 23 Intersection)

Combination Shoulder

STATION TO STATION		(P) Feet	(G) Feet
821+55	821+42.60 (E2)	4	6
1985+47.32 (E2)	2007+68	4	6	

3R_Shldr_C_Overlay_Modified

STATION EQUATION (E2) 821+42.60 (BK) = 1985+47.32 (AH)



STATION TO STATION		(L) Feet	(M) Feet	(TL) Feet	(R) Feet	Remarks
821+55	821+42.60 (E2)	12	0	0	12	
1985+47.32 (E2)	1994+48	12	0	0	12	
1994+48	2004+20	12	0-16	0	12	
2004+20	2005+82	12	16-4	0-12	12	
2005+82	2007+68	12	4	12	12	

3R_MillingOverlay_Modified

STATION EQUATION (E2) 821+42.60 (BK) = 1985+47.32 (AH)

Turning Lanes and Combination Shoulder

STATION TO STATION		(TL) Feet	(P) Feet	(G) Feet
821+55	821+42.60 (E2)	0	4	6
1985+47.32 (E2)	2001+08	0	4	6
2001+08	2002+85	0-12	4	6
2002+85	2006+57	12	4	6

3R_Shldr_C_Overlay_Modified

STATION EQUATION (E2) 821+42.60 (BK) = 1985+47.32 (AH)

(1) Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.

(2) Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.

(3) UAC existing subdrain. All subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-09A on CS Sheets for proposed locations).

(4) Blade the existing granular shoulder material away from the pavement prior to the pavement scarification operation. Blading shall create a 4% temporary granular shoulder to prevent drainage runoff problems during construction. Positive drainage shall be maintained.

General Notes:

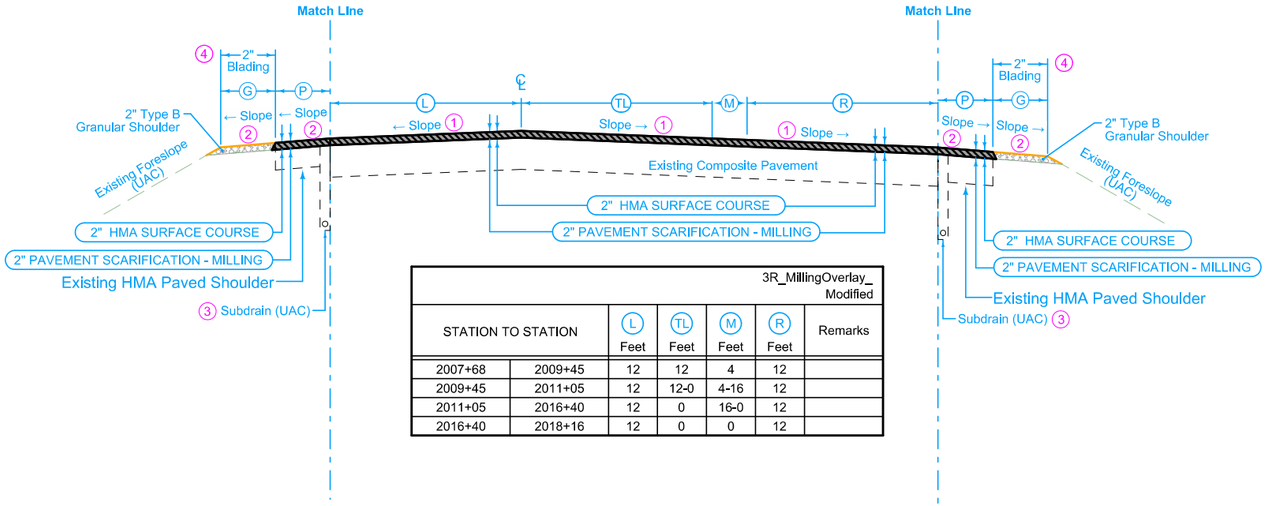
1. Section and Stationing is shown in the Direction of NB Traffic.
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4. See Tab 106-5 for Base Widening quantities.
5. See Tab 112-9 for Granular Shoulder quantities.

IA 149 Mainline HMA Resurfacing and Paved Shoulders

(IA 149/IA 23 Intersection at End of Project)

Combination Shoulder

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(G) Feet
2007+68	2018+16	4	6



3R_MillingOverlay_ Modified						
STATION TO STATION		(L) Feet	(TL) Feet	(M) Feet	(R) Feet	Remarks
2007+68	2009+45	12	12	4	12	
2009+45	2011+05	12	12-0	4-16	12	
2011+05	2016+40	12	0	16-0	12	
2016+40	2018+16	12	0	0	12	

Combination Shoulder

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	(G) Feet
2008+76	2018+16	4	6

① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.

② Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.

③ UAC existing subdrain. All subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-09A on CS Sheets for proposed locations).

④ Blade the existing granular shoulder material away from the pavement prior to the pavement scarification operation. Blading shall create a 4% temporary granular shoulder to prevent drainage runoff problems during construction. Positive drainage shall be maintained.

General Notes:

1. Section and Stationing is shown in the Direction of NB Traffic.
2. Stationing on typical sections does not include gapping for paved sideroads and paved entrances. Refer to Details.
3. See Tab 100-25 for Pavement quantities.
4. See Tab 106-5 for Base Widening quantities.
5. See Tab 112-9 for Granular Shoulder quantities.

IA 149 Mainline HMA Resurfacing and Paved Shoulders

(IA 149/IA 23 Intersection at End of Project)

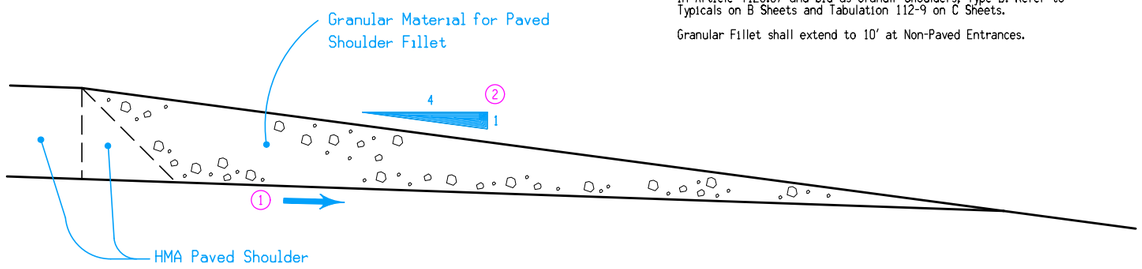
7145-M
Modified

Notes:

This typical illustrates the construction requirements for a Granular Material fillet at the edge of a paved shoulder.

The aggregate used for the Granular Fillet shall meet the requirements of Aggregate for Paved Shoulder Fillet, as specified in Article 4120.07 and bid as Granulr Shoulders, Type B. Refer to Typicals on B Sheets and Tabulation 112-9 on C Sheets.

Granular Fillet shall extend to 10' at Non-Paved Entrances.

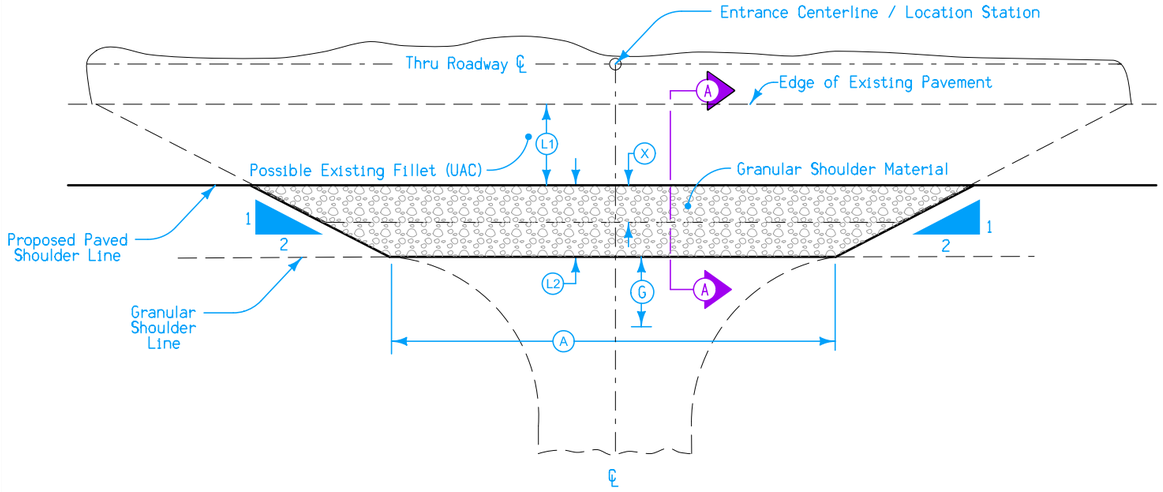


1. Match slope of under side of shoulder pavement.
2. A foreslope of 4:1 or flatter shall be provided.

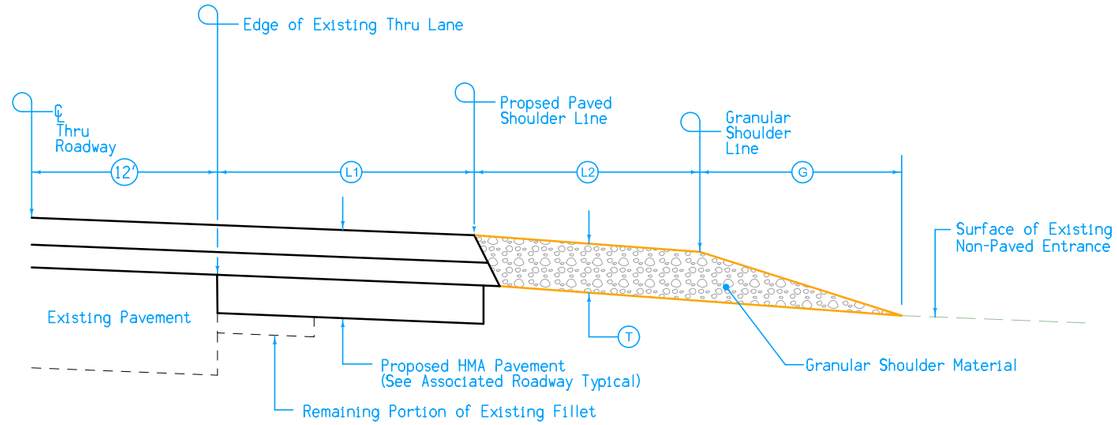
GRANULAR MATERIAL FOR PAVED SHOULDER FILLET

7117-M
Modified

CASE 'A' - Existing Paved Fillet Less Than or Equal to Proposed Paved Shoulder Line



PLAN



SECTION A-A

CASE A ENTRANCES	SIDE	A	L1	L2	G	T	FUNDING DIVISION
		FT	FT	FT	FT	INCHES	
1353+25	LT	35	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1364+80	RT	30	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1373+80	RT	25	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1374+00	LT	25	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1395+75	LT	50	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1399+20	RT	25	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1404+30	LT	40	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1417+00	LT	45	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1434+40	LT	20	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1434+50	RT	25	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1437+10	LT	40	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1444+70	LT	35	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1449+80	RT	30	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1480+50	LT	25	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1485+50	RT	30	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1513+25	LT	45	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1516+90	RT	25	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
1518+40	LT	30	4	0	3	1.5	DIVISION 1 (IDOT RURAL)
852+00	LT	50	4	0	10	3.5	DIVISION 1 (IDOT RURAL)
19		**34**	**Average Length for 19 Entrances**				**DIVISION 1 (IDOT RURAL)**

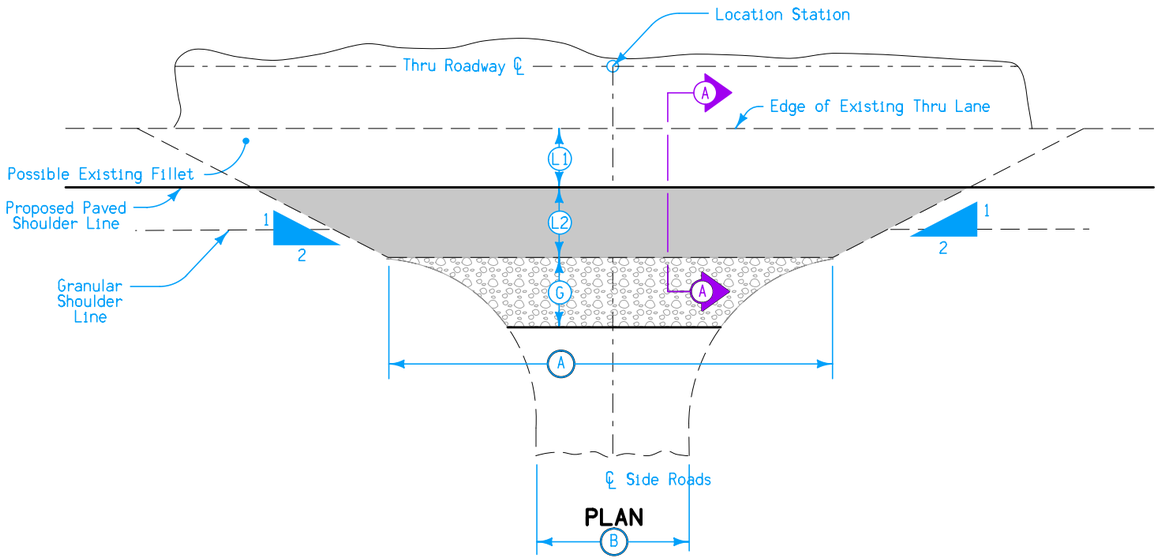
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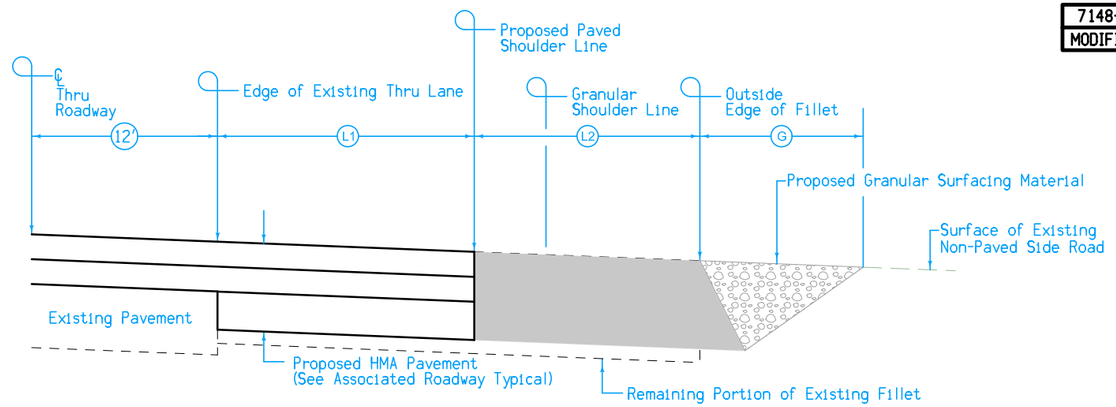
1. Refer to Tab 100-25 (HMA Pavement) and 106-5 (Base Widening) on the C Sheets for HMA Pavement Quantities associated with Dimension (L1).
2. Granular Shoulder Material Quantities associated with Dimensions (L2) and (G) are tabulated on Tab. 112-9 (Shoulders) on C Sheets. Refer to notes on Roadway Typical Sections on B sheets for more information.

(1) Existing Fillet Length is measured from the Edge of Existing Thru Lane.

GRANULAR SHOULDER CONSTRUCTION THRU ENTRANCES

7148-M
MODIFIED





SECTION A-A

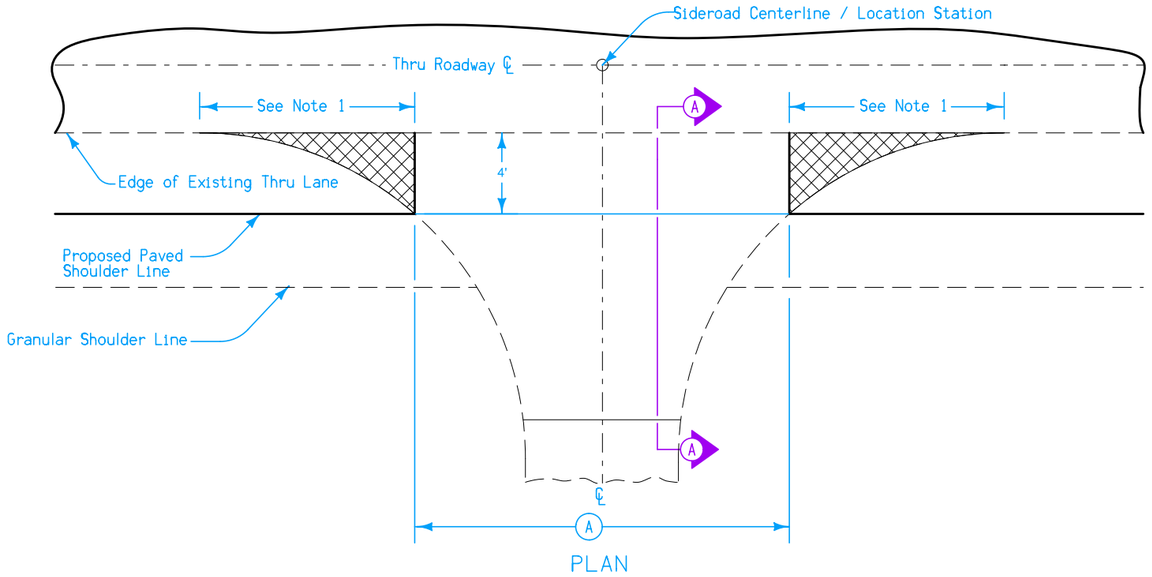
			Location	Begin	End	A	A (per PV-202)	B	L1	L2	G	Class 13 Excavation, Waste	Paved Shoulder, Hot Mix Asphalt Mixture, 6"	Granular Surfacing on Road, Type A Crushed Stone	FUNDING DIVISION
Location	Side	Mile Post	Station	Station	Station	feet	feet	feet	feet	feet	feet	CY	SY	TONS	
165th Street	RT		1423+50			65		24	4	6	3	5.6	44.7	2.336	DIVISION 1, IDOT RURAL
170th Street	LT		1449+80			65		24	4	6	3	5.6	44.7	2.336	DIVISION 1, IDOT RURAL
180th Street	RT		1502+50			65		24	4	6	3	5.6	44.7	2.336	DIVISION 1, IDOT RURAL
Wapello Mahaska Road	LT		1553+20			55		24	4	6	3	4.8	38.0	2.074	DIVISION 1, IDOT RURAL
Wapello Keokuk Road	RT		1553+20			40		24	4	6	3	3.5	28.0	1.680	DIVISION 1, IDOT RURAL
335th Street / G77	LT		823+30			65		30	4	6	10	5.6	44.7	8.313	DIVISION 1, IDOT RURAL
TOTALS												**30.6**	**244.7**	**19.075**	**DIVISION 1, IDOT RURAL**

GENERAL NOTES:

1. Refer to Tab 100-25 (HMA Pavement) and 106-5 (Base Widening) on the C Sheets for HMA Pavement, Widening, and Excavation Quantities associated with Dimension (L1).

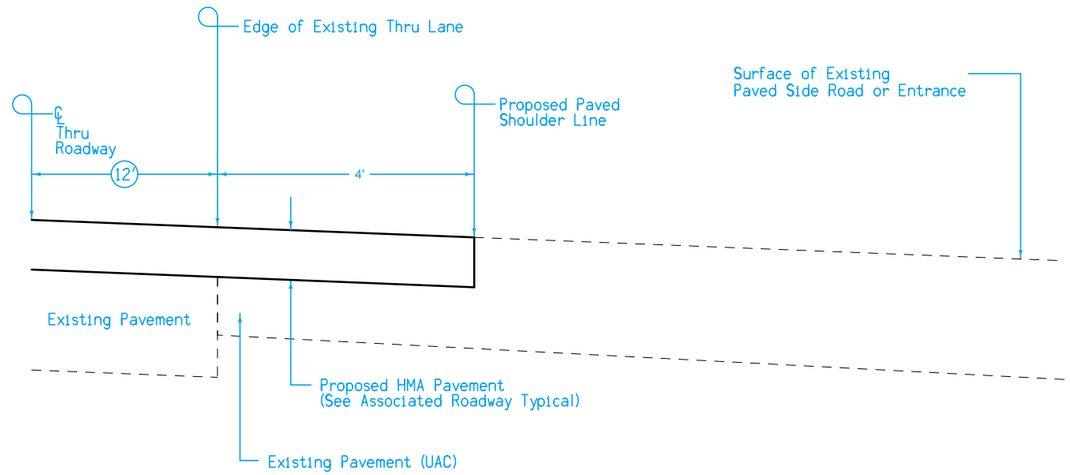
FILLET FOR NON-PAVED SIDE ROADS
(EXISTING PAVED FILLET GREATER THAN PROPOSED PAVED SHOULDER LINE)

7149-M
Modified



PLAN

Notch Type 'N2-M1'



SECTION A-A

Ⓢ HMA Surface Course
Ⓘ HMA Intermediate Course
Ⓜ Pavement Scarification

		Location	FUNDING DIVISION
Location	Side	Station	
Entrance	RT	1988+60	DIVISION 1, IDOT RURAL
Entrance	LT	1994+48	DIVISION 1, IDOT RURAL
Entrance	RT	1994+48	DIVISION 1, IDOT RURAL
Entrance	LT	2007+68	DIVISION 1, IDOT RURAL
TOTALS			**DIVISION 1, IDOT RURAL**

GENERAL NOTES:

1. The existing sideroad/entrance pavement outside the limits of Dimension A shall be removed and included in the cost of Class 13 Excavation. Class 13 Excavation and Base Widening (Tab. 106-5) shall NOT occur within the limits of Dimension A.

HMA RUNOUT FOR PAVED SIDE ROADS OR PAVED ENTRANCES ADJACENT TO AREAS WITHOUT PROPOSED ROADWAY PROFILE ELEVATION RISE

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway - DIVISION 1	
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.48	Refer to Tab. 110-17 on C Sheets. Woodland, per Iowa Code 314.23, will not be impacted. Iowa DOT Specification 2101.01A, which restricts tree clearing dates, is NOT required for this project.
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	43	Refer to Tab. 3R-CULV on C Sheets.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	30.6	Refer to Modified Detail 7148-M on B Sheets.
4	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	1,561.662	Refer Tab. 112-9 on C Sheets. Tabulation includes 20% contingency.
5	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.	SY	244.7	Refer to Modified Detail 7148-M on B Sheets.
6	2125-2225050	RESHAPING DITCHES	STA	1	Refer to Tab. 3R-CULV on C Sheets.
7	2212-0475095	CLEANING AND PREPARATION OF BASE	MILE	5.12	This bid item includes 5.12 miles of two lane roadway.
8	2212-5070310	PATCHES, FULL-DEPTH REPAIR	SY	315.2	Refer to Tab. 102-6C on C Sheets. Tabulation includes 15% contingency.
9	2212-5070330	PATCHES BY COUNT (REPAIR)	EACH	17	
10	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	2,426.2	Refer to Tab. 106-5 on C Sheets.
11	2213-8201040	BASE WIDENING, 4 IN. HOT MIX ASPHALT MIXTURE	SY	2,889.1	
12	2213-8201045	BASE WIDENING, 4.5 IN. HOT MIX ASPHALT MIXTURE	SY	16,841.9	
13	2214-5145150	PAVEMENT SCARIFICATION, NOMINAL THICKNESS	SY	18,555.4	Includes 1,066.7 SY from Tab. 102-16 on C Sheets. Includes 17,488.7 SY from Tab. 100-25 on C Sheets.
14	2214-7450050	BLADING AND SHAPING SHOULDER MATERIAL	STA	67.1	Refer Tab. 112-9 on C Sheets.
15	2303-1042500	HOT MIX ASPHALT HIGH TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MIX	TON	1,261.554	Refer to Tab. 100-25 on C Sheets. Tabulation includes 5% contingency for irregularities.
16	2303-1043504	HOT MIX ASPHALT HIGH TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, FRICTION L-4	TON	8,838.407	
17	2303-1258284	ASPHALT BINDER, PG 58-28H, HIGH TRAFFIC	TON	493.046	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway - DIVISION 1	
18	2303-1264224	ASPHALT BINDER, PG 64-22H, HIGH TRAFFIC	TON	112.952	
19	2303-6911000	HOT MIX ASPHALT PAVEMENT SAMPLES	LS	1	
20	2303-7000610	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE LABORATORY VOIDS (FORMULA - BY PAY FACTOR)	EACH	10,099.96	
21	2303-7000620	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA MIXTURE FIELD VOIDS (FORMULA - BY PAY FACTOR)	EACH	10,099.96	
22	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TON	19.075	Refer to Modified Detail 7148-M on B Sheets.
23	2317-7000120	PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR HMA PAVEMENT SMOOTHNESS (BY SCHEDULE)	EACH	17,112.69	
24	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1	Refer to Tab. 110-2 and 3R-CULV on C Sheets.
25	2402-0425040	FLOODED BACKFILL	CY	3	Refer to Tab. 3R-CULV on C Sheets.
26	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	56	Refer to Tab. 3R-CULV on C Sheets.
27	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.	EACH	7	
28	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.	LF	40	Includes 40 LF from Tab. 3R-CULV on C Sheets.
29	2502-8212034	SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	LF	24,138	Refer to Tab. 104-9A on CS Sheets.
30	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	94	
31	2526-8285020	CONSTRUCTION SURVEY, CONTROL POINT SURVEY	LS	1	
32	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1	
33	2527-9263155	PRE-CUT SYMBOLS AND LEGENDS, PREFORMED THERMOPLASTIC MARKING MATERIAL	EACH	7	Refer to Tab. 108-29 on C Sheets.
34	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	17.98	Refer to Tab. 108-22 on C Sheets.
35	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	2,664.86	Refer to Tab. 108-22 on C Sheets. Includes Temporary and Final Applications.
36	2527-9263225	PERMANENT TAPE MARKINGS, PREFORMED THERMOPLASTIC MARKING MATERIAL	STA	18.96	Refer to Tab. 108-22 on C Sheets.
37	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	3.84	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway - DIVISION 1	
38	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	568.4	
39	2527-9270120	GROOVES CUT FOR SYMBOLS AND LEGENDS	EACH	7	Refer to Tab. 108-29 on C Sheets.
40	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	4	Refer to Tab. 108-28 on C Sheet.
41	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on J Sheets.
42	2528-8445115	PILOT CARS	EACH	0	See Proposal.
43	2528-8445116	FLAGGER WITH AFAD	EACH	0	See Proposal.
44	2528-9290050	PORTABLE DYNAMIC MESSAGE SIGN (PDMS)	CDAY	0	
45	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA	SY	37.3	Refer to Tab. 102-6C on C Sheets.
46	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT	EACH	2	Refer to Tab. 102-6C on C Sheets.
47	2533-4980005	MOBILIZATION	LS	1	
48	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	516.4	Refer to Tab. 112-10 on C Sheets.
49	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	560	
50	2548-0000317	PENETRATING ENGINEERED EMULSION FOR FOG SEAL (CENTERLINE RUMBLE STRIPS)	SY	5,270.2	Refer to Tab. 112-10 on C Sheets. Refer to Special Provisions for Penetrating Engineered Fog Seal for additional information.
51	2548-0000357	MILLED CENTERLINE SINUSOIDAL RUMBLE STRIPS, HMA SURFACE	STA	258.7	Refer to Tab. 112-10 on C Sheets.
52	2599-9999018	('SQUARE YARDS' ITEM) HOT IN-PLACE RECYCLED ASPHALT PAVEMENT	SY	58,698.9	Refer to Tab. 100-25 on C Sheets. Refer to Special Provisions for Hot In-Place Recycling for additional information.
53	2599-9999020	('TONS' ITEM) ASPHALT REJUVENATING AGENT	TON	90.063	Refer to Tab. 100-25 on C Sheets. Refer to Special Provisions for Hot In-Place Recycling for additional information. Asphalt Rejuvenating Agent has a specific weight of 8.35 pounds per gallon and is placed at a rate of 0.35 gallons per square yard of 2-inch thick HIR.

111-25
10-18-11

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
C Sheets		
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100-27	EXISTING POSTED SPEED LIMIT	C.5
102-5	EXISTING PAVEMENT	C.5
102-6C	FULL-DEPTH PATCHES	C.7
102-16	NOTCHES AND RUNOUTS FOR RESURFACING	C.7
105-4_	STANDARD ROAD PLANS	C.4
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108-22	PAVEMENT MARKING LINE TYPES	C.13 - C.14
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3R-CULV	DRAINAGE STRUCTURE REPAIR WORK	C.6

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-121	04-18-23	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-201	10-17-23	Concrete Aprons
DR-303	10-17-17	Subdrains (Longitudinal)
DR-306	10-17-23	Precast Concrete Headwall for Subdrain Outlets
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
EW-105	04-21-15	Reshaping Slopes and Ditches
PM-110	10-15-24	Line Types
PM-111	04-21-20	Symbols and Legends
PM-115	10-20-26	Grooving for Line Types
PM-116	04-16-24	Grooving for Symbols and Legends
PM-120	10-15-24	Stop Lines and Islands
PM-210	10-15-24	Separation in Two-Lane Roadway
PM-521	10-20-26	Two-Lane Roadway with Right Turn Lanes
PM-522	10-20-26	Two-Lane Roadway with Left Turn Lanes
PR-103	10-21-25	Full Depth PCC Patch with Dowels
PV-12	10-20-26	Milled Shoulder Rumble Strips
PV-13	10-20-26	Milled Centerline Rumble Strips
PV-101	10-20-26	Joints
SI-881	10-20-26	Special Signs for Workzones
SI-882	10-18-16	Special Signs for Restricted Width Traffic Control Zones
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-18-23	Work Within 15 ft of Traveled Way
TC-213	04-18-23	Lane Closure with Flaggers
TC-214	04-18-23	Lane Closure with Flaggers for use with Pilot Car
TC-216	04-18-23	Lane Closure with Signals
TC-232	10-21-14	Shoulder Rumble Strip Operations
TC-233	10-17-17	Pavement Marking Operations Two-Lane
TC-251	04-18-23	Temporary Road Closure
TC-252	10-20-26	Routes Closed to Traffic
TC-282	10-15-19	Uneven Lanes
TC-283	04-18-23	Surveying Operations

262-6
10-18-05

UTILITIES
(NOT A POINT 25 PROJECT)

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

100-27
MODIFIED

EXISTING POSTED SPEED LIMIT

Road Identification	Begin Station	End Station	Proposed Posted Speed Limit			Remarks
			35 or less	40 - 45	over 45	
DIVISION 1, RURAL						
IA 149, NB Traffic	1349+45.00	1553+24.20			X	
Station Equation 1553+24.20 (BK) = 853+04.90 (AH)						
IA 149, NB Traffic	853+04.90	821+42.60			X	(1)
Station Equation 821+42.60 (BK) = 1985+47.32 (AH)						
IA 149, NB Traffic	1985+47.32	2007+69.26			X	
IA 23, NB Traffic	2007+69.84	2018+16.00			X	
IA 149, SB Traffic	1349+45.00	1553+24.20			X	
Station Equation 1553+24.20 (BK) = 853+04.90 (AH)						
IA 149, SB Traffic	853+04.90	821+42.60			X	(1)
Station Equation 821+42.60 (BK) = 1985+47.32 (AH)						
IA 149, SB Traffic	1985+47.32	2007+69.26			X	
IA 23, SB Traffic	2007+69.84	2018+16.00			X	

NOTES:
(1) Stationing is shown in the Direction of NB Traffic.

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
DIVISION 1, RURAL																					
1	90	IA-149	1	6.71	10.26	1995		STPN-63-2(54)--2J-90	AAC	1.5	AAC	1.5			MIL	3	DOUDS MINE	C.LST.			
1	90	IA-149	1	6.71	10.26	1971		FN-63-2(26)	AAC	3											
1	90	IA-149	1	6.71	10.26	1960		FN-159*<2>	AAC	3							DOUDS MINE	C.LST.			
1	90	IA-149	1	6.71	10.26	1927		FA-159	PC7	7							LINWOOD	C.LST.	I		
2	90	IA-149	1	10.26	11.06	1995		STPN-63-2(54)--2J-90	AAC	1.5	AAC	1.5			MIL	3	DOUDS MINE	C.LST.			
2	90	IA-149	1	10.26	11.06	1971		FN-63-2(26)	AAC	3											
2	90	IA-149	1	10.26	11.06	1960		FN-159*<2>	AAC	3							DOUDS MINE	C.LST.			
2	90	IA-149	1	10.26	11.06	1927		FA-159	PC7	7							LINWOOD	C.LST.	I		
3	54	IA-149	1	11.06	11.69	1995		STPN-63-2(54)--2J-90	AAC	1.5	AAC	1.5			MIL	3	DOUDS MINE	C.LST.			
3	54	IA-149	1	11.06	11.69	1981		FN-63-1(10)--2G-54	AAC	1.5	RAC	1					BONEPARTE	C.LST.			F-DP AC 71
3	54	IA-149	1	11.06	11.69	1971		FN-63-3(11)--21-62	AAC	1							LANGSTRATT	C.LST.			
3	54	IA-149	1	11.06	11.69	1960		FN-1133	AAC	1.5	AAC	1.5					DOUDS MINE	C.LST.			
3	54	IA-149	1	11.06	11.69	1952		P-510*<1>	BAC	1.5	TBB	1.5					OTIS QRY.	C.LST.			
3	54	IA-149	1	11.06	11.69	1929		P-510	PC7	7							LE GRAND	C.LST.	1		EDDYVILLE
4	90	IA-149	2	6.13	7.13	2022	S	STP-149-1(90)--2C-90	HMA	1.5	HMA	1.5	HMA	0.5	MIL	2.5					(1)
4	90	IA-149	2	6.13	7.13	2003		NHSX-63-2(66)--3H-90	AAC	2	BAC	2					LYLE MINE	C.LST.			
4	90	IA-149	2	6.13	7.13	2003	W	NHSX-63-2(66)--3H-90	AAC	2	BAC	2	BAC	7			LYLE MINE	C.LST.			
4	90	IA-149	2	6.13	7.13	1978		RF-63-2(27)--35-90	PCC	8.5	CTB	4					SELMA/GARDNER	C.LST.	2		

NOTES:
Note 1: 1" Interlayer, 3" HMA 4" HMA 2' WIDEN BOTH SIDES

110-17
04-18-17

CLEARING AND GRUBBING

Location: Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel	Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters: 3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	All Other Materials: Length FT	Width FT	Estimated Quantities: Units	Area Acres	Herbicide Application Each	Remarks
DIVISION 1 - RURAL																					
7.247 to 7.347	S	Trees - Clearing and Grubbing														528.0	10.0	0.0	0.12		
9.149 to 9.169	S	Trees - Clearing and Grubbing														106.0	10.0	0.0	0.02		
7.163 to 7.188	N	Trees - Clearing and Grubbing														132.0	10.0	0.0	0.03		
9.000 to 8.861	N	Trees - Clearing and Grubbing														734.0	10.0	0.0	0.17		
9.262 to 9.149	N	Trees - Clearing and Grubbing														597.0	10.0	0.0	0.14		
																TOTALS (DIVISION 1 - RURAL):			**0.48**		

3R-CULV
Special

DRAINAGE STRUCTURE REPAIR WORK

* Not a bid item
(1) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe

No.	Location	Size IN	Kind Of Pipe (1)	Length New Const. Lin. Ft. Lt.	Rt.	Connected Pipe Joint* (DR-121) Type	New Apron Each Lt.	Rt.	Flow Line Elevations Lt.	Rt.	Remove and Reinstall Pipe Culvert Linear Feet Left Side ≤ 36"	>36"	Right Side ≤ 36"	>36"	Remove and Reinstall Apron Each Left Side ≤ 36"	>36"	Right Side ≤ 36"	>36"	Class 20 Excavation CY Lt.	Rt.	Embankment In-Place CY Lt.	Rt.	Flooded Backfill CY Lt.	Rt.	Reshaping Ditch STA Lt.	Rt.	Remarks
DIVISION 1 - RURAL																											
1	7.519	24	RCP		4	Type 3		1												6		8		0.3			Remove Headwall / Install C Collar DR-122 (C-1)
2	7.519	24	RCP	4		Type 3	1												8		8		0.3			Remove Headwall / Install C Collar DR-122 (C-2)
3	10.784	24	RCP	8	4	Type 3	1	1											7	10	6	4	0.6	0.3		0.50	Remove Headwalls / Install C Collars
4	10.874	24	RCP	8	4	Type 3	1	1											7	10	6	4	0.6	0.3		0.50	Remove Headwalls / Install C Collars
5	11.008	24	RCP	8		Type 3	1												8		7		0.6				Remove Headwall / Install C Collar
	TOTALS (DIVISION 1 - RURAL):																		**56**		**43**		**3.0**		**1.00**		
		24	**RCP**	**40**			**7**																				

Note (1): Proposed Culvert specifications are based on thee most recently documented condition of the culvert. The Contractor shall confirm actual field conditions and notify the Engineer of any discrepancies before installation.
Note (2): Refer to Tab. 110-2 (Removal of Existing Structures) for Headwall Removals.

110-2
04-16-13

REMOVAL OF EXISTING STRUCTURES

Location	Description	Remarks
7.519 LT/RT	Headwall Removals (2) from Culvert	Refer to Tab. 3R-CULV.
10.784 LT/RT	Headwall Removals (2) from Culvert	Refer to Tab. 3R-CULV.
10.874 LT/RT	Headwall Removals (2) from Culvert	Refer to Tab. 3R-CULV.
11.008 LT	Headwall Removal (1) from Culvert	Refer to Tab. 3R-CULV.
Total:	**1**	**LS (Removal of Existing Structures)**

FULL-DEPTH PATCHES

Possible Standards: PR-101, PR-102, PR-103, PR-104, PR-105, and PR-140.

Location				Dimension			PCC Patches													
Count	Station	Reference Location Sign	Lane	Length	Width	Patch Thickness	With Dowels PR-103	Without Dowels PR-102	C R C PR-104	Ramp with Dowels PR-105	HMA Patches	Composite HMA	Subbase Patches PR-140	Subbase Patch w/ 'EF' Joint PR-101	Patch Subdrain PR-101 or PR-140	'CD' Joints	'CT' Joints	'EF' Joints PR-101	Anchor Lugs Removal	Remarks
			L, R, or B	FT	FT	IN	SY	SY	SY	SY	SY	TON	SY	SY	No.	No.	No.	No.	No.	
DIVISION 1 - RURAL																				
FULL-DEPTH PATCHES, REPAIR																				
1		7.619	L	16.0	14.0	16.0					24.9									Existing PCC Patches
1		7.86	L	8.0	16.0	16.0					14.2									Existing PCC Patches
1		7.881	L	16.0	16.0	16.0					28.4									Existing PCC Patches
1		8.843	L	11.0	14.0	16.0					17.1									Existing PCC Patches
1		8.995	L	12.0	14.0	16.0					18.7									Existing PCC Patches
1		9.023	L	13.0	14.0	16.0					20.2									Existing PCC Patches
1		10.54	L	20.0	15.0	16.0					33.3									Existing PCC Patches
1		7.619	R	16.0	14.0	16.0					24.9									Existing PCC Patches
1		7.837	R	8.0	15.0	16.0					13.3									Existing PCC Patches
1		7.84	R	9.0	15.0	16.0					15.0									Existing PCC Patches
1		7.86	R	8.0	16.0	16.0					14.2									Existing PCC Patches
1		8.843	R	7.0	14.0	16.0					10.9									Existing PCC Patches
1		8.995	R	12.0	14.0	16.0					18.7									Existing PCC Patches
1		9.023	R	13.0	14.0	16.0					20.2									Existing PCC Patches
14			**SUBTOTAL FULL-DEPTH PATCHES, REPAIR**								**274.1**									
3			15% CONTINGENCY								41.1									
17			**TOTAL FULL-DEPTH PATCHES, REPAIR**								**315.2**									**DIVISION 1 - RURAL**
FULL-DEPTH PATCHES, FINISH																				
PCC																				
1		9.751	L	12.0	14.0	12.0	18.7													New PCC Patch needed in PCC Roadway.
1		9.751	R	12.0	14.0	12.0	18.7													New PCC Patch needed in PCC Roadway.
2			**TOTAL FULL-DEPTH PATCHES, FINISH**				**37.3**													**DIVISION 1 - RURAL**

NOTCHES AND RUNOUTS FOR RESURFACING

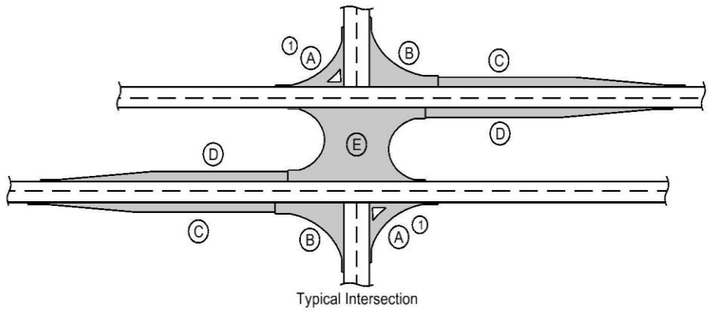
Refer to MODIFIED STANDARD ROAD PLANS PR-201 and PR-202 (ON U SHEETS)

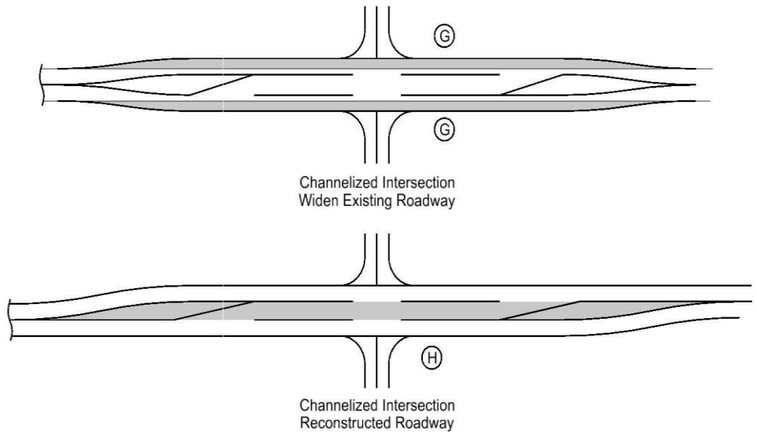
(1) Bid item. Refer to 100-25 for remaining values.

Location	Location Station	Direction of Traffic	Type of Notch or Runout	(S1)	(S2)	(I1)	(I2)	(Z1)	(Z2)	(L)	(M1)	(M2)	Pavement Scarification (1) (HMA Millings)		Remarks
				IN	IN	IN	IN	IN	IN	IN	IN	IN	TONS	SY	
DIVISION 1 - RURAL															
IA 149 (Mainline)	1349+45.00	BOTH	Type 'N1-M1'	1.5	1.5			2.0	2.0	75.0		1.5	8.156	200.0	Beginning of 'HIR and HMA Resurfacing' / Beginning of Project
IA 149 (Mainline)	1486+40.00	BOTH	Type 'R5-M1'	2.0	1.5				2.0	75.0	2.0		10.875	200.0	Runout for transition from 'HIR + 1.5" HMA Resurfacing' to '2" Mill and Fill'.
IA 149 (Mainline)	1489+00.00	BOTH	Type 'N2-M1'	2.0							2.0				Stop '2" Mill and Fill' at existing PCC.
IA 149 (Mainline)	1499+57.00	BOTH	Type 'N2-M1'	2.0							2.0				Resume '2" Mill and Fill' at existing PCC.
IA 149 (Mainline)	1501+57.00	BOTH	Type 'R5-M1'	2.0	1.5				2.0	75.0	2.0		10.875	200.0	Runout for transition from '2" Mill and Fill' to 'HIR + 1.5" HMA Resurfacing'.
IA 149 (Mainline)	852+20.00	BOTH	Type 'R5-M2'	1.5	1.5		2.0	2.0	2.0	175.0					Runout for transition from 'HIR + 1.5" HMA Resurfacing' to 'HIR + 3.5" HMA Resurfacing'.
IA 149 (Mainline)	821+55.00	BOTH	Type 'R5-M3'	2.0	1.5		2.0		2.0	175.0	2.0		25.375	466.7	Runout for transition from 'HIR + 3.5" HMA Resurfacing' to '2" Mill and Fill'.
IA 149 (Mainline)	7+40.00	BOTH	Type 'N2-M1'	2.0							2.0				Stop '2" Mill and Fill' for IA 149.
IA 23 (Mainline)	2018+16.00	BOTH	Type 'N2-M1'	2.0							2.0				Stop '2" Mill and Fill' for IA 23 / End of Project.
TOTALS (DIVISION 1 - RURAL)													**55.281**	**1066.7**	**DIVISION 1 - RURAL**

Notes:
(1) Refer to Modified Standard Road Plan PR-201 (Runouts for Resurfacing) on U Sheets.
(2) Refer to Modified Standard Road Plan PR-202 (Notches for Resurfacing) on U Sheets.

HMA PAVEMENT





(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.

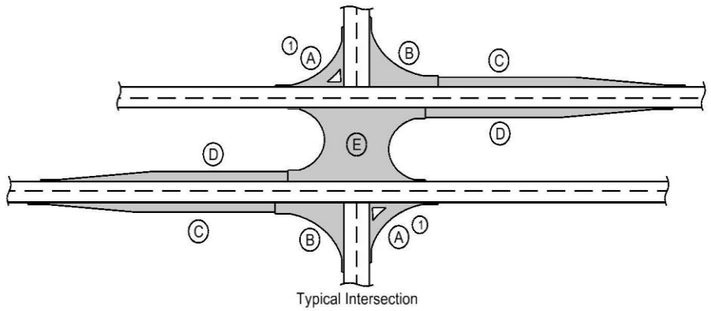
(2) Refer to PV-410, PV-411, PV-412, and PV-414.

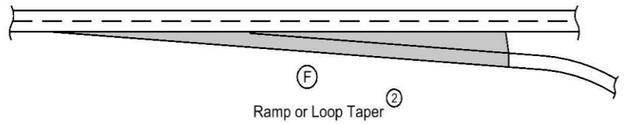
(3) Quantity includes Pavement Header.

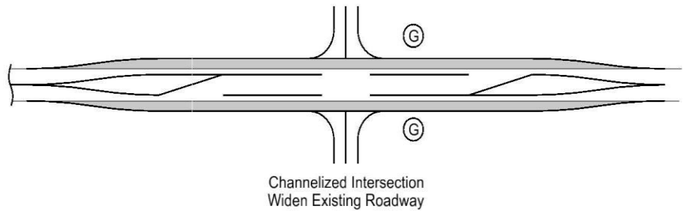
Calculations assume a Surface Course unit weight (lbs/cf) of 147, an Intermediate Course unit weight (lbs/cf) of 147, and a HMA Millings unit weight (lbs/cf) of 145

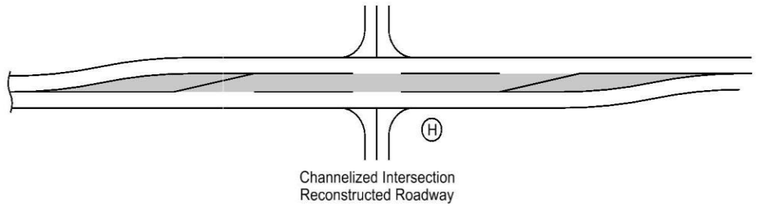
Location			Mainline			Area (3)							Bid Items: Hot Mix Asphalt Pavement				Bid Items: Binder							Remarks
Road Identification	Direction of Travel	Station to Station	Width	Length	Area	A (1)	B	C	D	E	G	H	Surface Course, High Traffic, 1/2 in. Mix, Friction L-4		Intermediate Course, High Traffic, 1/2 in. Mix		Surface PG 58-28H 6% / TON HMA	Surface PG 64-22H 6% / TON HMA	Intermediate PG 58-28H 6% / TON HMA	Hot In-Place Recycling	Asphalt Rejuvenating Agent 0.175 GAL/SY/IN HIR 8.35 lbs/gallon	Pavement Scarification (HMA Millings)		
			FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	TONS	SY	TONS	SY	TONS	TONS	TONS	SY	TONS	TONS	SY	
DIVISION 1, RURAL																								
IA 149 (Mainline)	BOTH	1349+45.00	1486+40.00	24.0	13695.0	36520.0							3019.748	36520.0			181.185			36520.0	53.365			
IA 149 (Mainline)	BOTH	1486+40.00	1488+00.00	24.0	160.0	426.7							47.040	426.7			2.822					46.400	426.7	
IA 149 (Mainline)	BOTH	1488+00.00	1489+00.00	24.0	100.0	266.7							29.400	266.7			1.764					29.000	266.7	
IA 149 (Mainline)	BOTH	1499+57.00	1501+57.00	24.0	200.0	533.3							58.800	533.3			3.528					58.000	533.3	
IA 149 (Mainline)	BOTH	1501+57.00	1553+24.20	24.0	5167.2	13779.2							1139.368	13779.2			68.362			13779.2	20.135			
Station Equation: 1553+24.2(BK) = 853+04.9(AH)																								
IA 149 (Mainline)	BOTH	853+04.90	852+20.00	24.0	84.9	226.4							18.720	226.4			1.123			226.4	0.331			
IA 149 (Mainline)	BOTH	852+20.00	821+55.00	24.0	3065.0	8173.3							675.833	8173.3	901.110	8173.3	40.550		54.067	8173.3	11.943			
IA 149 (Mainline)	BOTH	821+55.00	821+42.60	24.0	12.4	33.1							3.646	33.1				0.219				3.596	33.1	(2)
Station Equation: 821+42.6(BK) = 1985+47.32(AH)																								
IA 149 (Mainline)	BOTH	1985+47.32	1994+48.00	24.0	900.7	2401.8							264.800	2401.8				15.888				261.197	2401.8	(2)
IA 149 (Mainline)	BOTH	1994+48.00	2007+68.00	24.0	1320.0	3520.0		361.4	611.3			1520.7	662.977	6013.4				39.779				653.957	6013.4	(2)
IA 149 (West,ML)	BOTH	5+82.20	7+40.00	24.0	157.8	420.8							46.393	420.8				2.784				45.762	420.8	(2)
IA 23 (Mainline)	BOTH	2007+68.00	2018+16.00	24.0	1048.0	2794.7	221.2					1099.2	453.686	4115.1				27.221				447.514	4115.1	(2)
IA 149 (NB SHLDR)	NB	1349+45.00	1486+40.00	4.0	13695.0	6086.7							503.291	6086.7			30.197							
IA 149 (NB SHLDR)	NB	1486+40.00	1488+25.00	4.0	185.0	82.2							9.065	82.2			0.544							
IA 149 (NB SHLDR)	NB	1500+15.50	1501+57.00	4.0	141.5	62.9							6.934	62.9			0.416							
IA 149 (NB SHLDR)	NB	1501+57.00	1553+24.20	4.0	5167.2	2296.5							189.895	2296.5			11.394							
Station Equation: 1553+24.2(BK) = 853+04.9(AH)																								
IA 149 (NB SHLDR)	NB	853+04.90	852+20.00	4.0	84.9	37.7							3.120	37.7			0.187							
IA 149 (NB SHLDR)	NB	852+20.00	821+55.00	4.0	3065.0	1362.2							112.639	1362.2	150.185	1362.2	6.758		9.011					
IA 149 (NB SHLDR)	NB	821+55.00	821+42.60	4.0	12.4	5.5							0.608	5.5				0.036				0.599	5.5	
Station Equation: 821+42.6(BK) = 1985+47.32(AH)																								
IA 149 (NB SHLDR)	NB	1985+47.32	1994+48.00	4.0	900.7	400.3							44.133	400.3				2.648				43.533	400.3	
IA 149 (NB SHLDR)	NB	1994+48.00	2006+57.00	4.0	1209.0	537.3							59.241	537.3				3.554				58.435	537.3	
IA 149 (SHDLR,RET,RT)	EB	5+82.20	7+40.00	10.0	199.0	221.1							24.378	221.1				1.463				24.046	221.1	
IA 149 (SHLDR,RET,LT)	WB	5+82.20	7+40.00	10.0	213.8	237.6							26.191	237.6				1.571				25.834	237.6	
IA 23 (NB SHLDR)	NB	2008+76.00	2018+16.00	4.0	940.0	417.8							46.060	417.8				2.764				45.433	417.8	
IA 149 (SB SHLDR)	SB	1349+45.00	1486+40.00	4.0	13695.0	6086.7							503.291	6086.7			30.197							
IA 149 (SB SHLDR)	SB	1486+40.00	1486+65.00	4.0	25.0	11.1							0.919	11.1			0.055							
IA 149 (SB SHLDR)	SB	1501+38.00	1501+57.00	4.0	19.0	8.4							0.931	8.4			0.056							
IA 149 (SB SHLDR)	SB	1501+57.00	1553+24.20	4.0	5167.2	2296.5							189.895	2296.5			11.394							
Station Equation: 1553+24.2(BK) = 853+04.9(AH)																								
IA 149 (SB SHLDR)	SB	853+04.90	852+20.00	4.0	84.9	37.7							3.120	37.7			0.187							

HMA PAVEMENT









(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.

(2) Refer to PV-410, PV-411, PV-412, and PV-414.

(3) Quantity includes Pavement Header.

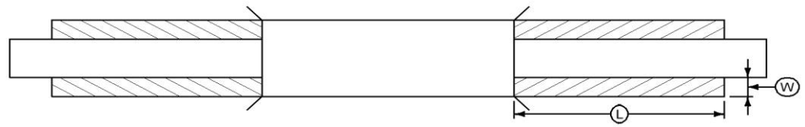
Calculations assume a Surface Course unit weight (lbs/cf) of 147, an Intermediate Course unit weight (lbs/cf) of 147, and a HMA Millings unit weight (lbs/cf) of 145

Location				Mainline			Area (3)							Bid Items										Remarks
														Hot Mix Asphalt Pavement				Binder						
Road Identification	Direction of Travel	Station to Station		Width	Length	Area	A (1)	B	C	D	E	G	H	Surface Course, High Traffic, 1/2 in. Mix, Friction L-4		Intermediate Course, High Traffic, 1/2 in. Mix		Surface PG 58-28H 6% / TON HMA	Surface PG 64-22H 6% / TON HMA	Intermediate PG 58-28H 6% / TON HMA	Hot In-Place Recycling	Asphalt Rejuvenating Agent 0.175 GAL/SY/IN HIR 8.35 lbs/gallon	Pavement Scarification (HMA Millings)		
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	TONS	SY	TONS	SY	TONS	TONS	TONS	SY	TONS	TONS	SY	
IA 149 (SB SHLDR)	SB	852+20.00	821+55.00	4.0	3065.0	1362.2								112.639	1362.2	150.185	1362.2	6.758		9.011					
IA 149 (SB SHLDR)	SB	821+55.00	821+42.60	4.0	12.4	5.5								0.608	5.5				0.036				0.599	5.5	
Station Equation: 821+42.6(BK) = 1985+47.32(AH)																									
IA 149 (SB SHLDR)	SB	1985+47.32	1994+48.00	4.0	900.7	400.3								44.133	400.3				2.648				43.533	400.3	
IA 149 (SB SHLDR)	SB	1994+48.00	2007+68.00	4.0	1320.0	586.7								64.680	586.7				3.881				63.800	586.7	
IA 23 (SB SHLDR)	SB	2007+68.00	2018+16.00	4.0	1048.0	465.8								51.352	465.8				3.081				50.653	465.8	
			SUBTOTAL											8417.531	95918.6	1201.480	10897.8	397.479	107.573	72.089	58698.9	85.774	1901.892	17488.7	
			5% CONTINGENCY											420.877		60.074		19.874	5.379	3.604		4.289			
			TOTALS (DIVISION 1 - RURAL)											**8838.407**	**95918.6**	**1261.554**	**10897.8**	**417.353**	**112.952**	**75.693**	**58698.9**	**90.063**	**1901.892**	**17488.7**	

NOTES:
(1) Stationing is shown in the Direction of NB Traffic.
(2) Refer to U Sheets for Pavement Marking Details and general layout of the IA 149 and IA 23 intersection.

AREAS FOR PAVEMENT OR BASE WIDENING

Refer to Standard Road Plans PV-105 or PV-203



(1) Bid Item
(2) Estimated for two applications to achieve lifts and one application of 0.10 Gal/SY adjacent to existing pavement. Priming of subgrade or finished base is not required.
Calculations assume a HMA unit weight (lbs/cf) of 145, a Special Backfill unit weight (lbs/cf) of 140, and a Tack Coat unit weight (gal/sy) of 0.05.

Station to Station		Side	Pavement Type	(L) Length	(W) Width	(T) Thickness	HMA Base Widening (1)	HMA Base Widening (1)	PCC Base Widening (1)	PCC Pavement Widening (1)	Tack Coat		Tack Coat (2)	Asphalt Binder (1)	Class 13 Excavation, Widening (1)	Special Backfill (1)	Remarks
											Lifts	Vertical Edge					
				FT	FT	IN	TONS	SY	SY	SY	GAL	GAL	GAL	TONS	CY	TONS	
DIVISION 1 - RURAL																	
1349+45.00	1486+40.00	NB	HMA	13695.00	4.0	4.5		6086.7			608.67	57.06	665.73		760.8		
1486+40.00	1488+25.00	NB	HMA	185.00	4.0	4.0		82.2			8.22	0.69	8.91		9.1		
1500+15.50	1501+57.00	NB	HMA	141.50	4.0	4.0		62.9			6.29	0.52	6.81		7.0		
1501+57.00	1553+24.20	NB	HMA	5167.20	4.0	4.5		2296.5			229.65	21.53	251.18		287.1		
Station Equation: 1553+24.20(BK)= 853+04.90(AH)																	
853+04.90	852+20.00	NB	HMA	84.90	4.0	4.5		37.7			3.77	0.35	4.13		4.7		(1)
852+20.00	821+55.00	NB	HMA	3065.00	4.0	4.0		1362.2			136.22	11.35	147.57		151.4		(1)
1349+45.00	1486+40.00	SB	HMA	13695.00	4.0	4.5		6086.7			608.67	57.06	665.73		760.8		
1486+40.00	1486+65.00	SB	HMA	25.00	4.0	4.0		11.1			1.11	0.09	1.20		1.2		
1501+38.00	1501+57.00	SB	HMA	19.00	4.0	4.0		8.4			0.84	0.07	0.91		0.9		
1501+57.00	1553+24.20	SB	HMA	5167.20	4.0	4.5		2296.5			229.65	21.53	251.18		287.1		
Station Equation: 1553+24.20(BK)= 853+04.90(AH)																	
853+04.90	852+20.00	SB	HMA	84.90	4.0	4.5		37.7			3.77	0.35	4.13		4.7		(1)
852+20.00	821+55.00	SB	HMA	3065.00	4.0	4.0		1362.2			136.22	11.35	147.57		151.4		(1)
DIVISION 1 - RURAL TOTAL							**4" THICK**	**2889.1**							**2426.2**		
							4.5" THICK	**16841.9**									

NOTES:
(1) Stationing is shown in the Direction of NB Traffic.

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) See Typ. 7156, 7157, or 7158.
(3) Bid Item.
(4) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(5) Bid Item. Typ. 7156, 7157, or 7158.

Calculations assume a HMA unit weight (lbs/cf) of 145, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location					Quantities																			
Road Identification	Direction (1) Of Traffic	Station to Station		Side	(P) Width	(P_{SG}) Width	(G) Width	(L) Length	Class 13 (4) Excavation	Hot Mix Asphalt		Binder	6" Paved Shoulder	9" Paved Shoulder at Guardrai	HMA Detour Pavement	Special Backfill PCC		Granular Shoulder		Blading and Shaping Shoulder Material		Earth Shoulder Construction (PCC)		Remarks
										TON	TON/STA					TON (3)	TON/STA	TON (3)	TON/STA	STA (3)	HMA CY	STA (3)	STA 0	
					FT	FT (2)	FT	FT	CY (3)			TONS	SY (3)	SY (5)	SY (3)									
IA 149	SB	1349+45.00	1486+40.00	LT				13695.0										239.663	1.750					
IA 149	SB	1486+40.00	1486+65.00	LT				25.0										0.438	1.750	0.3	0.6			(1)
IA 149	SB	1501+38.00	1501+57.00	LT				19.0										0.333	1.750	0.2	0.5			(1)
IA 149	SB	1501+57.00	1553+24.20	LT				5167.2										90.426	1.750					
STATION EQUATION (E1) 1553+24.20 (BK) = 853+04.90 (AH)																								
IA 149	SB	853+04.90	852+20.00	LT				84.9										1.486	1.750					(1)
IA 149	SB	852+20.00	821+55.00	LT				3065.0										93.866	3.063					(1)
IA 149	SB	821+55.00	821+42.60	LT			6.0	12.4										0.868	7.000	0.1	0.5			(1)
STATION EQUATION (E2) 821+42.60 (BK) = 1985+47.32 (AH)																								
IA 149	SB	1985+47.32	2007+68.00	LT			6.0	2220.7										155.448	7.000	22.2	82.2			(1)
IA 23	SB	2007+68.00	2018+16.00	LT			6.0	1048.0										73.360	7.000	10.5	38.8			(1)
IA 149	NB	1349+45.00	1486+40.00	RT				13695.0										239.663	1.750					(1)
IA 149	NB	1486+40.00	1488+00.00	RT				160.0										2.800	1.750	1.6	4.0			(1)
IA 149	NB	1488+00.00	1488+25.00	RT				25.0										0.438	1.750	0.3	0.6			(1)
IA 149	NB	1500+15.50	1500+35.00	RT				19.5										0.341	1.750	0.2	0.5			(1)
IA 149	NB	1500+35.00	1501+57.00	RT				122.0										2.135	1.750	1.2	3.0			(1)
IA 149	NB	1501+57.00	1553+24.20	RT				5167.2										90.426	1.750					
STATION EQUATION (E1) 1553+24.20 (BK) = 853+04.90 (AH)																								
IA 149	NB	853+04.90	852+20.00	RT				84.9										1.486	1.750					(1)
IA 149	NB	852+20.00	821+55.00	RT				3065.0										93.866	3.063					(1)
IA 149	NB	821+55.00	821+42.60	RT			6.0	12.4										0.868	7.000	0.1	0.5			(1)
STATION EQUATION (E2) 821+42.60 (BK) = 1985+47.32 (AH)																								
IA 149	NB	1985+47.32	2006+57.00	RT			6.0	2109.7										147.678	7.000	21.1	78.1			(1)
IA 23	NB	2008+76.00	2018+16.00	RT			6.0	940.0										65.800	7.000	9.4	34.8			(1)
SUBTOTAL																		**1301.385**		**67.1**				
20% CONTINGENCY FOR GRANULAR SHOULDER																		**260.277**						
DIVISION 1 - RURAL TOTAL																		**1561.662**		**67.1**				

NOTES:
(1) Stationing is shown in the Direction of NB Traffic.

MILLED RUMBLE STRIPS

See PV-12 and PV-13

* Calculated at 18" width for Shoulder. **For use with Penetrating Engineered Fog Seal. Calculated at 2" wider than rumble strips.

Location										Effective Shoulder Width			
Road Identification	Station to Station		Shoulder Pavement Type	Rumble Strip Type (Centerline, Rt or Lt Shoulder)	(L)	Installation Length PCC	Installation Length HMA	Fog Seal* (Milled Rumble Strip) Shoulder	Fog Seal** (Milled Rumble Strip) Centerline	PCC Paved	HMA Paved	Granular\ Earth	Remarks
					IN	STA	STA	GAL	SY	FT	FT	FT	
DIVISION 1 - RURAL													
IA 149	1349+45.00	1489+00.00	HMA	Centerline			139.55	0.0	2842.7				Milled Sinusoidal.
IA 149	1499+57.00	1553+24.19	HMA	Centerline			53.67	0.0	1093.4				Milled Sinusoidal.
Station Equation: 1553+24.2													
IA 149	853+04.90	821+42.60	HMA	Centerline			31.62	0.0	644.2				(1). Milled Sinusoi
Station Equation: 821+42.60													
IA 149	1985+47.32	2007+67.31	HMA	Centerline			22.20	0.0	452.3				Milled Sinusoidal.
IA 23	2007+69.84	2018+16.00	HMA	Centerline			10.46	0.0	213.2				Milled Sinusoidal.
IA 149 (EB/WB)	6+20.00	7+39.47	HMA	Centerline			1.19	0.0	24.4				Milled Sinusoidal.
IA 149	1349+45.00	1489+00.00	HMA	Right Shoulder	12"		139.55	151.2	0.0		4.0		Milled.
IA 149	1499+57.00	1553+24.19	HMA	Right Shoulder	12"		53.67	58.2	0.0		4.0		Milled.
Station Equation: 1553+24.2													
IA 149	853+04.90	821+42.60	HMA	Right Shoulder	12"		31.62	34.3	0.0		4.0		(1). Milled.
Station Equation: 821+42.60													
IA 149	1985+47.32	2007+67.31	HMA	Right Shoulder	12"		22.20	24.1	0.0		4.0		Milled.
IA 23	2007+69.84	2018+16.00	HMA	Right Shoulder	12"		10.46	11.4	0.0		4.0		Milled.
IA 149 (EB/WB)	6+70.00	7+39.47	HMA	Right Shoulder	12"		0.69	0.8	0.0		4.0		Milled.
IA 149	1349+45.00	1489+00.00	HMA	Left Shoulder	12"		139.55	151.2	0.0		4.0		Milled.
IA 149	1499+57.00	1553+24.19	HMA	Left Shoulder	12"		53.67	58.2	0.0		4.0		Milled.
Station Equation: 1553+24.2													
IA 149	853+04.90	821+42.60	HMA	Left Shoulder	12"		31.62	34.3	0.0		4.0		(1). Milled.
Station Equation: 821+42.60													
IA 149	1985+47.32	2007+67.31	HMA	Left Shoulder	12"		22.20	24.1	0.0		4.0		Milled.
IA 23	2007+69.84	2018+16.00	HMA	Left Shoulder	12"		10.46	11.4	0.0		4.0		Milled.
IA 149 (EB/WB)	6+70.00	7+39.47	HMA	Left Shoulder	12"		0.69	0.8	0.0		4.0		Milled.
				Totals		**PCC**	**HMA**	**Fog Seal**	**Fog Seal**				
				HMA Shoulders			**516.40**	**560.0**	**0.0**				**Milled.**
				PCC Shoulders		**0.00**							
				PCC or HMA Shoulders		**0.00**	**0.00**	**0.0**	**0.0**				
				HMA Centerlines			**258.70**	**0.0**	**5270.2**				**Milled Sinusoidal.**
				PCC Centerlines		**0.00**							
				PCC or HMA Centerlines		**0.00**	**0.00**						

Notes:
(1) Stationing is shown in the Direction of NB Traffic.

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 0.67 as value includes number of 4-inch passes to cover median nose area.

ELW6: Edge Line Right (White) @ 1.00
SLW6: Solid Lane Line (White) @ 1.00
NPY6: No Passing Zone Line (Yellow) @ 1.25
SLW2: Stop Line (White) @ 4.00
BCY6: Broken Centerline (Yellow) @ 0.25
CHW10: Channelizing Line (White) @ 1.67
#N/A
DCY6: Double Centerline (Yellow) @ 2.00
#N/A
CHY10: Channelizing Line (Yellow) @ 1.67
#N/A

Location								Length by Line Type (Unfactored)													
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			ELW6	NPY6**	BCY6*	DCY6	CHY10	SLW6	SLW2	CHW10					Applications	TOTAL	Grooves Cut	Remarks
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	#	STA	STA	
DIVISION 1 - RURAL																							
IA 149	1349+45.00	1486+40.00	SB	Waterborne/Solvent Paint	X			136.95												3	410.85	136.95	
IA 149	1486+40.00	1489+00.00	SB	Waterborne/Solvent Paint	X			2.60												3	7.80	2.60	
IA 149	1489+00.00	1499+57.00	SB	Waterborne/Solvent Paint	X			10.57												3	31.71	10.57	
IA 149	1499+57.00	1501+57.00	SB	Waterborne/Solvent Paint	X			2.00												3	6.00	2.00	
IA 149	1501+57.00	1553+24.20	SB	Waterborne/Solvent Paint	X			51.67												3	155.02	51.67	
IA 149	1349+45.00	1486+40.00	NB	Waterborne/Solvent Paint			X	136.95												3	410.85	136.95	
IA 149	1486+40.00	1489+00.00	NB	Waterborne/Solvent Paint			X	2.60												3	7.80	2.60	
IA 149	1489+00.00	1499+57.00	NB	Waterborne/Solvent Paint			X	10.57												3	31.71	10.57	
IA 149	1499+57.00	1501+57.00	NB	Waterborne/Solvent Paint			X	2.00												3	6.00	2.00	
IA 149	1501+57.00	1553+24.20	NB	Waterborne/Solvent Paint			X	51.67												3	155.02	51.67	
IA 149	1349+45.00	1354+65.00	SB	Waterborne/Solvent Paint		X			5.20											3	15.60		
IA 149	1354+65.00	1357+21.00	BOTH	Waterborne/Solvent Paint		X				2.56										3	7.68		
IA 149	1357+21.00	1367+08.00	NB	Waterborne/Solvent Paint		X			9.87											3	29.61		
IA 149	1367+08.00	1384+46.00	BOTH	Waterborne/Solvent Paint		X					17.38									3	52.14		
IA 149	1384+46.00	1386+33.00	SB	Waterborne/Solvent Paint		X			1.87											3	5.61		
IA 149	1386+33.00	1396+65.00	BOTH	Waterborne/Solvent Paint		X				10.32										3	30.96		
IA 149	1396+65.00	1405+77.00	NB	Waterborne/Solvent Paint		X			9.12											3	27.36		
IA 149	1405+77.00	1406+77.00	BOTH	Waterborne/Solvent Paint		X					1.00									3	3.00		
IA 149	1406+77.00	1415+31.00	SB	Waterborne/Solvent Paint		X			8.54											3	25.62		
IA 149	1415+31.00	1425+39.00	BOTH	Waterborne/Solvent Paint		X				10.08										3	30.24		
IA 149	1425+39.00	1434+26.00	NB	Waterborne/Solvent Paint		X			8.87											3	26.61		
IA 149	1434+26.00	1444+14.00	SB	Waterborne/Solvent Paint		X			9.88											3	29.64		
IA 149	1444+14.00	1449+14.00	BOTH	Waterborne/Solvent Paint		X				5.00										3	15.00		
IA 149	1449+14.00	1459+45.00	NB	Waterborne/Solvent Paint		X			10.31											3	30.93		
IA 149	1459+45.00	1464+37.00	BOTH	Waterborne/Solvent Paint		X					4.92									3	14.76		
IA 149	1464+37.00	1471+12.00	SB	Waterborne/Solvent Paint		X			6.75											3	20.25		
IA 149	1471+12.00	1474+19.00	BOTH	Waterborne/Solvent Paint		X					3.07									3	9.21		
IA 149	1474+19.00	1476+38.00	NB	Waterborne/Solvent Paint		X			2.19											3	6.57		
IA 149	1476+38.00	1479+12.00	BOTH	Waterborne/Solvent Paint		X				2.74										3	8.22		
IA 149	1479+12.00	1484+88.00	SB	Waterborne/Solvent Paint		X			5.76											3	17.28		
IA 149	1484+88.00	1486+40.00	BOTH	Waterborne/Solvent Paint		X				1.52										3	4.56		
IA 149	1486+40.00	1489+00.00	BOTH	Waterborne/Solvent Paint		X				2.60										3	7.80		
IA 149	1489+00.00	1494+43.00	NB	Waterborne/Solvent Paint		X			5.43											3	16.29		
IA 149	1494+43.00	1499+57.00	NB	Waterborne/Solvent Paint		X			5.14											3	15.42		
IA 149	1499+57.00	1501+57.00	NB	Waterborne/Solvent Paint		X			2.00											3	6.00		
IA 149	1501+57.00	1501+73.00	NB	Waterborne/Solvent Paint		X			0.16											3	0.48		
IA 149	1501+73.00	1518+87.00	BOTH	Waterborne/Solvent Paint		X					17.14									3	51.42		
IA 149	1518+87.00	1524+69.00	SB	Waterborne/Solvent Paint		X			5.82											3	17.46		
IA 149	1524+69.00	1553+24.20	BOTH	Waterborne/Solvent Paint		X				28.55										3	85.66		
Station Equation: 1553+24.20(BK)= 853+04.90(AH)																							
IA 149	853+04.90	852+20.00	SB	Waterborne/Solvent Paint	X			0.85												3	2.55	0.85	(1)
IA 149	852+20.00	821+55.00	SB	Waterborne/Solvent Paint	X			30.65												4	122.60	30.65	(1)
IA 149	821+55.00	821+42.60	SB	Waterborne/Solvent Paint	X			0.12												3	0.37	0.12	(1)
IA 149	853+04.90	852+20.00	NB	Waterborne/Solvent Paint			X	0.85												3	2.55	0.85	(1)
IA 149	852+20.00	821+55.00	NB	Waterborne/Solvent Paint			X	30.65												4	122.60	30.65	(1)
IA 149	821+55.00	821+42.60	NB	Waterborne/Solvent Paint			X	0.12												3	0.37	0.12	(1)
IA 149	853+04.90	852+20.00	BOTH	Waterborne/Solvent Paint		X				0.85										3	2.55		(1)
IA 149	852+20.00	821+55.00	BOTH	Waterborne/Solvent Paint		X				30.65										4	122.60		(1)
IA 149	821+55.00	821+42.60	BOTH	Waterborne/Solvent Paint		X				0.12										3	0.37		(1)
Station Equation: 821+42.60(BK)= 1985+47.32(AH)																							
IA 149	1985+47.32	2007+68.00	SB	Waterborne/Solvent Paint	X			22.21												3	66.62	22.21	
IA 23	2007+68.00	2018+16.00	SB	Waterborne/Solvent Paint	X			10.48												3	31.44	10.48	
IA 149	1985+47.32	2007+68.00	NB	Waterborne/Solvent Paint			X	22.21												3	66.62	22.21	
IA 23	2007+68.00	2018+16.00	NB	Waterborne/Solvent Paint			X	10.48												3	31.44	10.48	
IA 149	1985+47.32	1989+98.00	BOTH	Waterborne/Solvent Paint		X				4.51										3	13.52		
IA 149	1989+98.00	1994+09.00	BOTH	Waterborne/Solvent Paint		X					4.11									3	12.33		
IA 149	1994+09.00	2006+80.00	SB	Waterborne/Solvent Paint		X						11.58								3	34.74		Separation Channel. (2)
IA 149	1994+09.00	2003+09.00	NB	Waterborne/Solvent Paint		X						8.00								3	24.00		Separation Channel. (2)
IA 149	2003+09.00	2005+68.00	NB	Waterborne/Solvent Paint		X						2.60								3	7.80		Separation Channel. (2)
IA 149	1994+09.00	2005+68.00	BOTH	Permanent Preformed Thermoplastic Marking		X						7.29								1	7.29	7.29	Diagonals. (2)
IA 149	2005+68.00	2007+18.00	BOTH	Waterborne/Solvent Paint		X					1.50									3	4.50		
IA 149	2002+89.00	2007+18.00	NB	Waterborne/Solvent Paint			X						4.29							3	12.87	4.29	
IA 149	2005+68.00	2007+18.00	NB	Waterborne/Solvent Paint	X								1.50							3	4.50	1.50	
IA 149	5+98.70	7+40.00	EB	Waterborne/Solvent Paint			X	1.41												3	4.24	1.41	
IA 149	5+77.00	7+40.00	WB	Waterborne/Solvent Paint	X			1.63												3	4.89	1.63	
IA 149	5+93.00	7+40.00	BOTH	Waterborne/Solvent Paint		X			1.47											3	4.41		
IA 149	5+92.00		WB	Permanent Preformed Thermoplastic Marking	X									0.52						1	0.52	0.52	Stop Bar (2)
IA 149	5+92.00		WB	Permanent Preformed Thermoplastic Marking	X										0.32					1	0.32	0.32	Stop Sign Island (2)
IA 23	2008+19.00	2012+62.00	BOTH	Waterborne/Solvent Paint		X					4.43									3	13.29		
IA 23	2012+62.00	2018+15.00	NB	Waterborne/Solvent Paint		X						5.54								3	16.62		Separation Channel. (2)
IA 23	2012+62.00	2014+82.00	SB	Waterborne/Solvent Paint		X						2.21								3	6.63		Separation Channel. (2)
IA 23	2014+82.00	2018+16.00	SB	Waterborne/Solvent Paint		X						3.34								3	10.02		Separation Channel. (2)
IA 23	2012+62.00	2018+16.00	BOTH	Permanent Preformed Thermoplastic Marking		X						2.50								1	2.50	2.50	Diagonals. (2)

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 0.67 as value includes number of 4-inch passes to cover median nose area.

ELW6: Edge Line Right (White) @ 1.00
SLW6: Solid Lane Line (White) @ 1.00
NPY6: No Passing Zone Line (Yellow) @ 1.25
SLW2: Stop Line (White) @ 4.00
BCY6: Broken Centerline (Yellow) @ 0.25
CHW10: Channelizing Line (White) @ 1.67
#N/A
DCY6: Double Centerline (Yellow) @ 2.00
#N/A
CHY10: Channelizing Line (Yellow) @ 1.67
#N/A

Location								Length by Line Type (Unfactored)													
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			ELW6	NPY6**	BCY6*	DCY6	CHY10	SLW6	SLW2	CHW10				Applications	TOTAL	Grooves Cut	Remarks
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	#	STA	STA	
IA 23	2008+19.00	2012+59.00	SB	Waterborne/Solvent Paint	X								4.40						3	13.20	4.40	
IA 149	1367+18.00	1373+12.00	BOTH	Removal of Paint		X					5.94								1	5.94		Refer to TC-216
IA 149	1367+18.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1373+12.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1367+18.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1373+12.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1367+18.00	1373+12.00	BOTH	Waterborne/Solvent Paint		X					5.94								1	5.94		Refer to TC-216
IA 149	1541+32.00	1547+22.00	BOTH	Removal of Paint		X				5.90									1	5.90		Refer to TC-216
IA 149	1541+32.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1547+22.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1541+32.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1547+22.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1541+32.00	1547+22.00	BOTH	Waterborne/Solvent Paint		X				5.90									1	5.90		Refer to TC-216
IA 149	1546+49.00	1552+39.00	BOTH	Removal of Paint		X				5.90									1	5.90		Refer to TC-216
IA 149	1546+49.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1552+39.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1546+49.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1552+39.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	1546+49.00	1552+39.00	BOTH	Waterborne/Solvent Paint		X				5.90									1	5.90		Refer to TC-216
IA 149	851+70.00	846+80.00	BOTH	Removal of Paint		X				4.90									1	4.90		Refer to TC-216
IA 149	851+70.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	846+80.00		BOTH	Wet Retroreflective Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	851+70.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	846+80.00		BOTH	Removal of Removable Tape		X								0.12					1	0.12		Refer to TC-216
IA 149	851+70.00	846+80.00	BOTH	Waterborne/Solvent Paint		X				4.90									1	4.90		Refer to TC-216
			DIVISION 1 - RURAL																			
			Factored Total: Removal of Paint					-	-	4.18	11.88	-	-	-	-	-	-	-	-	-	-	
			Factored Total: Wet Retroreflective Removable Tape					-	-	-	-	-	-	3.84	-	-	-	-	-	-	-	
			Factored Total: Removal of Permanent Tape					-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Factored Total: Removal of Removable Tape					-	-	-	-	-	-	3.84	-	-	-	-	-	-	-	
			Factored Total: Waterborne/Solvent Paint					1679.04	368.93	86.46	333.18	166.68	30.57	-	-	-	-	-	-			Temp+Final Applications
			Factored Total: Permanent Preformed Thermoplastic Marking					-	-	-	-	16.35	-	2.08	0.53	-	-	-	-			Final Application
			Factored Total: Grooves Cut for Pavement Markings					539.25	-	-	-	16.35	10.19	2.08	0.53	-	-	-	-			Temp+Final Applications
			Bid Quantity: Pavement Markings Removed								**16.06**											
			Bid Quantity: Wet Retroreflective Removable Tape Markings								**3.84**											
			Incidental Removal of Removable Tape								**3.84**											
			Bid Quantity: Painted Pavement Markings, Waterborne or Solvent-Based								**2664.86**											**Temp+Final Applications**
			Bid Quantity: Permanent Tape Markings, Preformed Thermoplastic Marking Material								**18.96**											**Final Application**
			Bid Quantity: Grooves Cut for Pavement Markings								**568.40**											**Final Application**

Notes:
(1) Stationing is shown in the Direction of NB Traffic.
(2) Refer to U Sheet for 'IA 149 and IA 23 INTERSECION PAVEMENT MARKINGS' layout details.

PAVEMENT MARKING SYMBOLS AND LEGENDS

Refer to PM-111

Road Identification	Location															SCHOOL	XING	STOP	AHEAD	ONLY	BIKE	LANE	EXIT	Groove Cuts	Remarks
	Station	Side	STAW	RTAW	LTAW	CSRW	CSLW	CSTW	CRLW	FERW	LLRW	RLRW	RRCW	BLSW	WCSW	WPSB	SCLW	XNGW	STPW	AHDW	ONLW	BIKW	LANW	XITW	EACH	
DIVISION 1 - RURAL																										
IA 149	2005+60.27	NB		1																					1	
IA 149	2006+35.27	NB		1																					1	
IA 149	2006+21.52	NB			1																				1	
IA 149	2006+96.52	NB			1																				1	
IA 23	2008+40.82	SB			1																				1	
IA 23	2009+56.15	SB			1																				1	
IA 23	2012+30.65	SB			1																				1	
	SUBTOTALS:			2	5																				7	
PRE-CUT SYMBOLS AND LEGENDS, PREFORMED THERMOPLASTIC MARKING:							**7**																			
GROOVES CUT FOR SYMBOLS ANS LEGENDS:							**7**																			

TEMPORARY TRAFFIC SIGNALS

No.	Location Station	Type			Remarks
		One Lane Traffic	Haul Road	Intersection	
1	1367+89.00	x			(1)
	1372+43.00	x			
2	1542+02.00	x			(1)
	1546+52.00	x			
3	1547+19.00	x			(1)
	1551+69.00	x			
4	851+00.00	x			(2)
	847+50.00	x			
4	**TOTALS**				

Note (1): Culvert Extension, LT. & RT. Refer to Tab. 3R-CULV.
Note (2): Culvert Extension, LT. Refer to Tab. 3R-CULV.

LONGITUDINAL SUBDRAIN SHOULDER

* Not a bid item.

Line No.	Road or Lane Identification	Station From	Station To	Side	Depth (IN) (D)	Subdrain Size (IN)	Length (FT)	Outlet Station	Outlet Type	Porous Backfill* (CY)	Remarks
1.0	IA 149	1349+45.00	1354+50.00	Right	24.0	4.0	535.0	1349+45.00	DR-306	24.8	
2.0	IA 149			Right	24.0	4.0	30.0	1354+50.00	DR-306	1.4	
3.0	IA 149	1354+50.00	1358+75.00	Right	24.0	4.0	455.0	1354+50.00	DR-306	21.1	
4.0	IA 149			Right	24.0	4.0	30.0	1358+75.00	DR-306	1.4	
5.0	IA 149	1358+75.00	1364+50.00	Left	24.0	4.0	605.0	1358+75.00	DR-306	28.0	
6.0	IA 149			Left	24.0	4.0	30.0	1364+50.00	DR-306	1.4	
7.0	IA 149	1364+50.00	1370+50.00	Left	24.0	4.0	630.0	1364+50.00	DR-306	29.2	
8.0	IA 149			Left	24.0	4.0	30.0	1370+50.00	DR-306	1.4	
9.0	IA 149	1370+50.00	1374+50.00	Left	24.0	4.0	430.0	1370+50.00	DR-306	19.9	
10.0	IA 149			Left	24.0	4.0	30.0	1374+50.00	DR-306	1.4	
11.0	IA 149	1374+50.00	1378+00.00	Left	24.0	4.0	380.0	1374+50.00	DR-306	17.6	
12.0	IA 149			Left	24.0	4.0	30.0	1378+00.00	DR-306	1.4	
13.0	IA 149	1378+00.00	1383+00.00	Right	24.0	4.0	530.0	1378+00.00	DR-306	24.5	
14.0	IA 149			Right	24.0	4.0	30.0	1383+00.00	DR-306	1.4	
15.0	IA 149	1383+00.00	1389+00.00	Left	24.0	4.0	630.0	1383+00.00	DR-306	29.2	
16.0	IA 149			Left	24.0	4.0	30.0	1389+00.00	DR-306	1.4	
17.0	IA 149	1389+00.00	1394+00.00	Left	24.0	4.0	530.0	1389+00.00	DR-306	24.5	
18.0	IA 149			Left	24.0	4.0	30.0	1394+00.00	DR-306	1.4	
19.0	IA 149	1394+00.00	1397+00.00	Left	24.0	4.0	330.0	1394+00.00	DR-306	15.3	
20.0	IA 149			Left	24.0	4.0	30.0	1397+00.00	DR-306	1.4	
21.0	IA 149	1397+00.00	1402+00.00	Right	24.0	4.0	530.0	1397+00.00	DR-306	24.5	
22.0	IA 149			Right	24.0	4.0	30.0	1402+00.00	DR-306	1.4	
23.0	IA 149	1402+00.00	1407+00.00	Right	24.0	4.0	530.0	1402+00.00	DR-306	24.5	
24.0	IA 149			Right	24.0	4.0	30.0	1407+00.00	DR-306	1.4	
25.0	IA 149	1407+00.00	1413+00.00	Right	24.0	4.0	630.0	1407+00.00	DR-306	29.2	
26.0	IA 149			Right	24.0	4.0	30.0	1413+00.00	DR-306	1.4	
27.0	IA 149	1413+00.00	1419+20.00	Right	24.0	4.0	650.0	1413+00.00	DR-306	30.1	
28.0	IA 149			Right	24.0	4.0	30.0	1419+20.00	DR-306	1.4	
29.0	IA 149	1419+20.00	1423+00.00	Right	24.0	4.0	410.0	1419+20.00	DR-306	19.0	
30.0	IA 149			Right	24.0	4.0	30.0	1423+00.00	DR-306	1.4	
31.0	IA 149	1424+00.00	1427+00.00	Right	24.0	4.0	330.0	1424+00.00	DR-306	15.3	
32.0	IA 149			Right	24.0	4.0	30.0	1427+00.00	DR-306	1.4	
33.0	IA 149	1427+00.00	1432+00.00	Right	24.0	4.0	530.0	1427+00.00	DR-306	24.5	
34.0	IA 149			Right	24.0	4.0	30.0	1432+00.00	DR-306	1.4	
35.0	IA 149	1432+00.00	1436+50.00	Right	24.0	4.0	480.0	1432+00.00	DR-306	22.2	
36.0	IA 149			Right	24.0	4.0	30.0	1436+50.00	DR-306	1.4	
37.0	IA 149	1436+50.00	1441+00.00	Right	24.0	4.0	480.0	1436+50.00	DR-306	22.2	
38.0	IA 149			Right	24.0	4.0	30.0	1441+00.00	DR-306	1.4	
39.0	IA 149	1441+00.00	1445+00.00	Right	24.0	4.0	430.0	1441+00.00	DR-306	19.9	
40.0	IA 149			Right	24.0	4.0	30.0	1445+00.00	DR-306	1.4	
41.0	IA 149	1445+00.00	1450+50.00	Right	24.0	4.0	580.0	1445+00.00	DR-306	26.9	
42.0	IA 149			Right	24.0	4.0	30.0	1450+50.00	DR-306	1.4	
43.0	IA 149	1450+50.00	1453+00.00	Right	24.0	4.0	280.0	1450+50.00	DR-306	13.0	
44.0	IA 149			Right	24.0	4.0	30.0	1453+00.00	DR-306	1.4	
45.0	IA 149	1453+00.00	1457+50.00	Right	24.0	4.0	480.0	1453+00.00	DR-306	22.2	
46.0	IA 149			Right	24.0	4.0	30.0	1457+50.00	DR-306	1.4	
47.0	IA 149	1457+50.00	1461+00.00	Right	24.0	4.0	380.0	1457+50.00	DR-306	17.6	

Note 1: ALL LONGITUDINAL SUBDRAINS ARE TYPE 13 UNLESS OTHERWISE NOTED IN REMARKS COLUMN
Note 2: ALL LONGITUDINAL SUBDRAIN MAY BE ADJUSTED BOTH VERTICALLY AND HORIZONTALLY IN THE FIELD AS NECESSARY

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Mark A. Dell
21208
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date: 8/12/26

Mark A. Dell
Printed or Typed Name

My license renewal date is December 31, 20 27

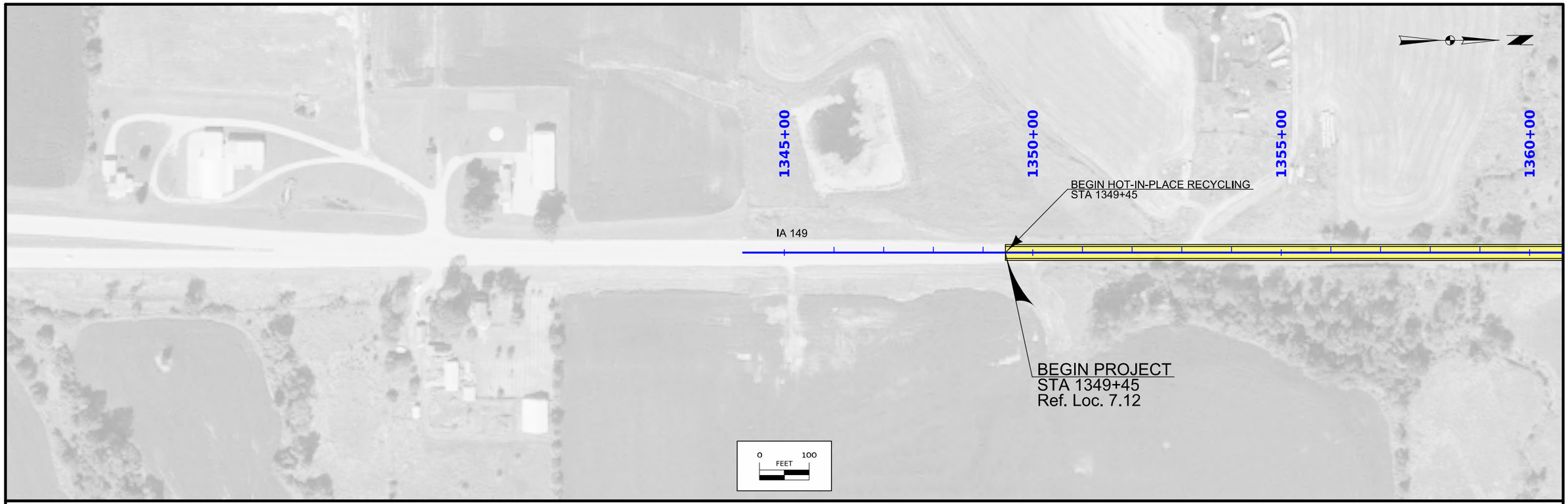
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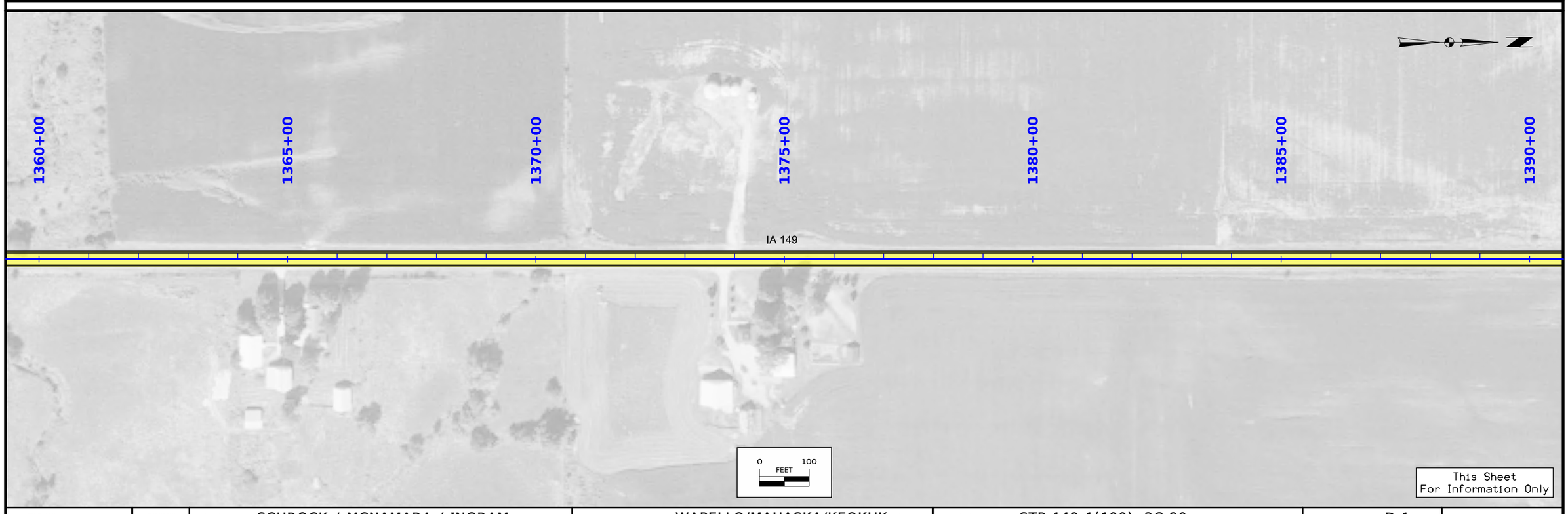
LONGITUDINAL SUBDRAIN SHOULDER

* Not a bid item.

Line No.	Road or Lane Identification	Station From	Station To	Side	Depth (IN) (D)	Subdrain Size (IN)	Length (FT)	Outlet Station	Outlet Type	Porous Backfill* (CY)	Remarks
48.0	IA 149			Right	24.0	4.0	30.0	1461+00.00	DR-306	1.4	
49.0	IA 149	1461+00.00	1466+00.00	Right	24.0	4.0	530.0	1461+00.00	DR-306	24.5	
50.0	IA 149			Right	24.0	4.0	30.0	1466+00.00	DR-306	1.4	
51.0	IA 149	1466+00.00	1471+00.00	Right	24.0	4.0	530.0	1466+00.00	DR-306	24.5	
52.0	IA 149			Right	24.0	4.0	30.0	1471+00.00	DR-306	1.4	
53.0	IA 149	1471+00.00	1476+00.00	Right	24.0	4.0	530.0	1471+00.00	DR-306	24.5	
54.0	IA 149			Right	24.0	4.0	30.0	1476+00.00	DR-306	1.4	
55.0	IA 149	1476+00.00	1480+00.00	Right	24.0	4.0	430.0	1476+00.00	DR-306	19.9	
56.0	IA 149			Right	24.0	4.0	30.0	1480+00.00	DR-306	1.4	
57.0	IA 149	1480+00.00	1486+40.00	Right	24.0	4.0	670.0	1480+00.00	DR-306	31.0	
58.0	IA 149			Right	24.0	4.0	30.0	1486+40.00	DR-306	1.4	
59.0	IA 149	1501+57.00	1506+00.00	Left	24.0	4.0	473.0	1501+57.00	DR-306	21.9	
60.0	IA 149			Left	24.0	4.0	30.0	1506+00.00	DR-306	1.4	
61.0	IA 149	1506+00.00	1511+00.00	Left	24.0	4.0	530.0	1506+00.00	DR-306	24.5	
62.0	IA 149			Left	24.0	4.0	30.0	1511+00.00	DR-306	1.4	
63.0	IA 149	1511+00.00	1516+00.00	Left	24.0	4.0	530.0	1511+00.00	DR-306	24.5	
64.0	IA 149			Left	24.0	4.0	30.0	1516+00.00	DR-306	1.4	
65.0	IA 149	1516+00.00	1521+00.00	Left	24.0	4.0	530.0	1516+00.00	DR-306	24.5	
66.0	IA 149			Left	24.0	4.0	30.0	1521+00.00	DR-306	1.4	
67.0	IA 149	1521+00.00	1525+00.00	Right	24.0	4.0	430.0	1521+00.00	DR-306	19.9	
68.0	IA 149			Right	24.0	4.0	30.0	1525+00.00	DR-306	1.4	
69.0	IA 149	1525+00.00	1530+00.00	Right	24.0	4.0	530.0	1525+00.00	DR-306	24.5	
70.0	IA 149			Right	24.0	4.0	30.0	1530+00.00	DR-306	1.4	
71.0	IA 149	1530+00.00	1535+00.00	Right	24.0	4.0	530.0	1530+00.00	DR-306	24.5	
72.0	IA 149			Right	24.0	4.0	30.0	1535+00.00	DR-306	1.4	
73.0	IA 149	1535+00.00	1540+00.00	Right	24.0	4.0	530.0	1535+00.00	DR-306	24.5	
74.0	IA 149			Right	24.0	4.0	30.0	1540+00.00	DR-306	1.4	
75.0	IA 149	1540+00.00	1545+00.00	Right	24.0	4.0	530.0	1540+00.00	DR-306	24.5	
76.0	IA 149			Right	24.0	4.0	30.0	1545+00.00	DR-306	1.4	
77.0	IA 149	1545+00.00	1550+00.00	Right	24.0	4.0	530.0	1545+00.00	DR-306	24.5	
78.0	IA 149			Right	24.0	4.0	30.0	1550+00.00	DR-306	1.4	
79.0	IA 149	1550+00.00	1553+00.00	Right	24.0	4.0	330.0	1550+00.00	DR-306	15.3	
80.0	IA 149			Right	24.0	4.0	30.0	1553+00.00	DR-306	1.4	
81.0	IA 149	852+85.00	850+00.00	Left	24.0	4.0	255.0	852+85.00	DR-306	11.8	STATION EQUATION:(E1)1553+24.2 (BK)=853+05 (AH)
82.0	IA 149			Left	24.0	4.0	30.0	850+00.00	DR-306	1.4	
83.0	IA 149	850+00.00	845+00.00	Right	24.0	4.0	470.0	850+00.00	DR-306	21.8	
84.0	IA 149			Right	24.0	4.0	30.0	845+00.00	DR-306	1.4	
85.0	IA 149	845+00.00	840+00.00	Right	24.0	4.0	470.0	845+00.00	DR-306	21.8	
86.0	IA 149			Right	24.0	4.0	30.0	840+00.00	DR-306	1.4	
87.0	IA 149	840+00.00	835+00.00	Right	24.0	4.0	470.0	840+00.00	DR-306	21.8	
88.0	IA 149			Right	24.0	4.0	30.0	835+00.00	DR-306	1.4	
89.0	IA 149	835+00.00	830+00.00	Right	24.0	4.0	470.0	835+00.00	DR-306	21.8	
90.0	IA 149			Right	24.0	4.0	30.0	830+00.00	DR-306	1.4	
91.0	IA 149	830+00.00	827+30.00	Right	24.0	4.0	240.0	830+00.00	DR-306	11.1	
92.0	IA 149			Right	24.0	4.0	30.0	827+30.00	DR-306	1.4	
93.0	IA 149	826+00.00	821+55.00	Right	24.0	4.0	415.0	826+00.00	DR-306	19.2	
94.0	IA 149			Right	24.0	4.0	30.0	821+55.00	DR-306	1.4	
Total							24138.0		DR-306:94	1117.8	

Note 1: ALL LONGITUDINAL SUBDRAINS ARE TYPE 13 UNLESS OTHERWISE NOTED IN REMARKS COLUMN
Note 2: ALL LONGITUDINAL SUBDRAIN MAY BE ADJUSTED BOTH VERTICALLY AND HORIZONTALLY IN THE FIELD AS NECESSARY

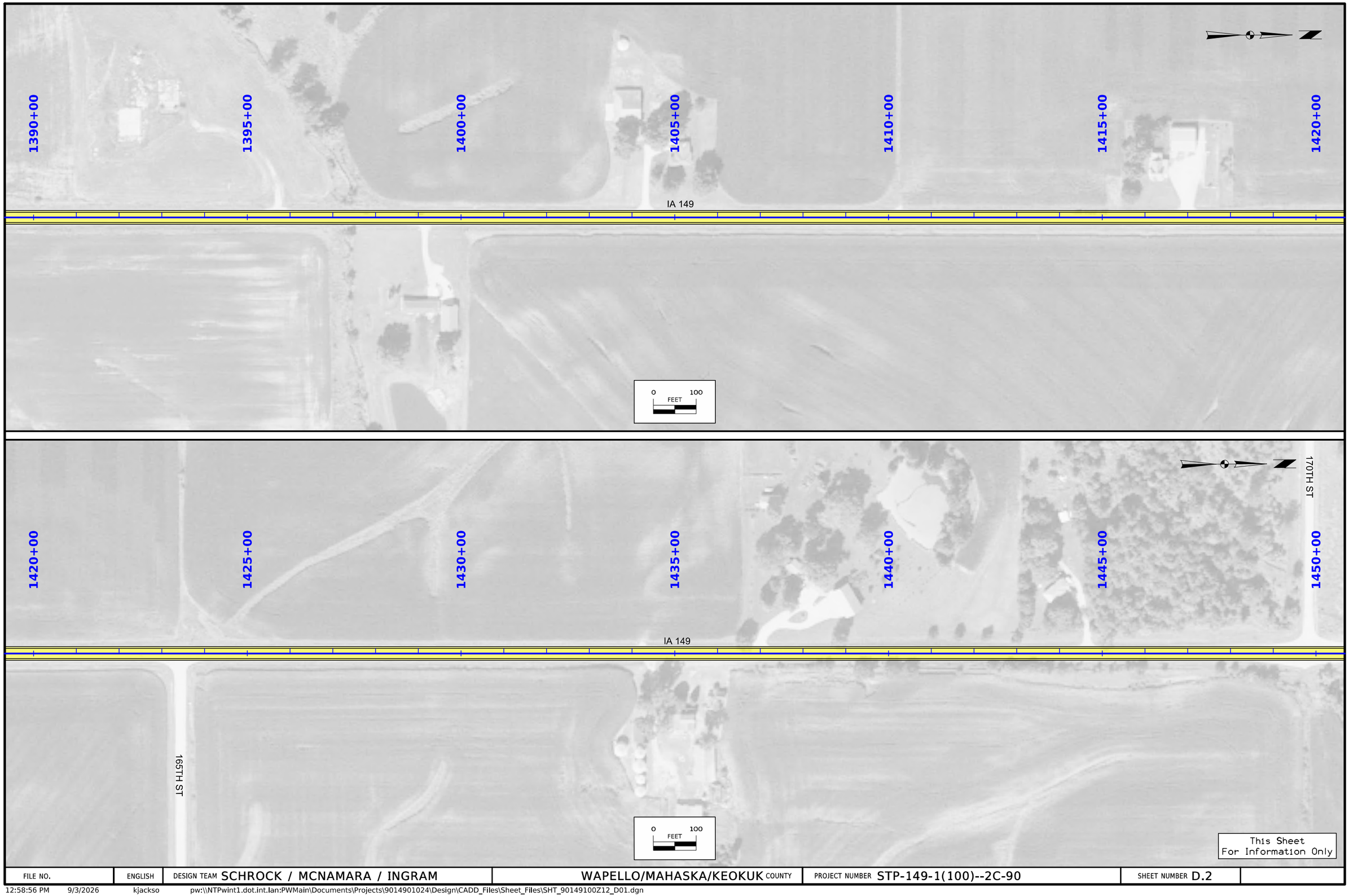




This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER D.1	

12:58:45 PM 9/3/2026 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9014901024\Design\CADD_Files\Sheet_Files\SHT_90149100Z12_D01.dgn



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FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER D.2	

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1450+00

1455+00

1460+00

1465+00

1470+00

1475+00

1480+00

0 100
FEET

1480+00

1485+00

1490+00

1495+00

1500+00

1505+00

1510+00

CEDAR CREEK

STOP MILL/FILL
AT PCC PAVEMENT
STA 1489+00

RESUME MILL/FILL
AT PCC PAVEMENT
STA 1499+57

STOP MILL/FILL
RESUME HOT-IN-PLACE RECYCLING
STA 1501+57

IA 149

STOP HOT-IN-PLACE RECYCLING
BEGIN MILL/FILL
STA 1486+40

STA 1493+10.91
U.A.C. GUARDRAILS
FHWA #050691
MAINTENANCE #9009.9S149
214' X 44' CCS BRIDGE
REF. LOC. 9.9

CEDAR CREEK

180TH ST

0 100
FEET

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER D.3	

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1510+00 1515+00 1520+00 1525+00 1530+00 1535+00 1540+00

IA 149

0 100
FEET

1540+00 1545+00 1550+00 WAPELLO MAHASKA RD 850+00 845+00 840+00

STATION EQUATION
STA 1553+24.19 (BK)
= STA 853+04.90 (AH)

IA 149

WAPELLO KEOKUK RD

0 100
FEET

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER D.4	

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FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER D.5	

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108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. Through traffic on IA 149 shall be maintained at all times.

2. Access to all properties shall be maintained at all times.

3. If necessary to complete sideroad pavement; lane closures and street closures shall be in accordance with TC-213, TC-251, and TC-252. Safety Closures or Type III barricades placed to protect work area shall not be counted or paid for separately.

4. The Contractor will use Portable Dynamic Message Signs (PDMS) for advanced notification of project work. Locations shall be coordinated with the Engineer.

5. Culvert Repairs shall utilize TC-216 (Lane Closure with Signals).

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None.	

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
IA 149	BOTH	Wapello	Approx 1.1 mi N of US 63 to Wapello Mahaska Rd/Wapello Keokuk Rd		Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(1)
IA 149	BOTH	Keokuk	Wapello Keokuk Rd to 0.4 mi S of IA 23		Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(1)
IA 149	BOTH	Mahaska	Wapello Mahaska Rd to 0.4 mi S of IA 23		Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(1)
IA 149	BOTH	Wapello	IA 149 Culvert Extension w/ Traf. Ctrl., STA. 1370+37, MP 7.519	Culvert	Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(2)
IA 149	BOTH	Wapello	IA 149 Culvert Extension w/ Traf. Ctrl., STA. 1554+27, MP 10.784	Culvert	Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(2)
IA 149	BOTH	Wapello	IA 149 Culvert Extension w/ Traf. Ctrl., STA. 1549+44, MP 10.874	Culvert	Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(2)
IA 149	NB	Mahaska/Keokuk	IA 149 Culvert Extension w/ Traf. Ctrl., STA. 849+75, MP 11.008	Culvert	Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(2)

(1) Restriction is during milling and paving operations.
(2) Restriction is during Culvert Extension operations, utilizes Standard Road Plan TC-216.

108-26A
08-01-08

STAGING NOTES

Suggested Sequence of Construction:
1. Clearing and Grubbing, Culvert Repair, Patching.
2. Blading of Granular Shoulder Material.
3. Longitudinal Subdrain Installation.
4. HMA Base Widening. (See General Note A)
5. Hot In-Place Recycling (HIR).
6. HMA Resurfacing.
7. Granular Shoulder Replacement.
8. Grooving for Pavement Markings.
9. Rumble Strips.

General Notes:
A. The HMA Base Widening operation shall be done prior to the Hot In-Place Recycling (HIR) operation. This will allow for a wider/stabilized construction platform for the HIR operation. This will effectively develop a heated/sealed joint at the interface of the Base Widening/HIR material which will help mitigate future reflective cracking.
B. Pavement Markings shall be placed on each drivable surface as construction progresses.

LANDSCAPE DESIGN

STATE OF IOWA
Rachel
A. Harris
LA000775
PROFESSIONAL LANDSCAPE ARCHITECT

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed professional landscape architect under the laws of the state of Iowa.

Signature — Date: 10-05-2026

Rachel A. Harris
Printed or Typed Name

My license renewal date is June 30, 2028

Pages or sheets covered by this seal: RC.1 - RC.5

FILE NO.	ENGLISH	DESIGN TEAM **Harris/Pohlen/McDonald**	**Wapello** COUNTY	PROJECT NUMBER **STP-149-1(100)--2C-90**	SHEET NUMBER **RC.1**

11:06:20 AM 8/10/2026 bmcdona pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9014901024\Roadside\90149100_Signature.dgn

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadside Items : Roadside Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadside Items	
1	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	1,500	Refer to Standard Road Plan EC-204. Item is included for temporary perimeter sediment control, inlet protection, and water velocity reduction on slopes or ditches at locations to be determined during construction. Verify specific locations with the Engineer prior to beginning placement.
2	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	1,500	Refer to Standard Road Plan EC-204. Item is included for temporary perimeter sediment control, inlet protection, and water velocity reduction on slopes or ditches at locations to be determined during construction. Verify specific locations with the Engineer prior to beginning placement.
3	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	3,000	

232_03A
9/28/22

EROSION CONTROL (RURAL SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are all incidental to mobilization and will not be paid for separately.

281_03
11/9/23

STORM WATER BEST MANAGEMENT PRACTICES

When the following best management practices are used, they are intended to account for disturbed areas where storage volume cannot be provided: Perimeter and Slope Sediment Control Device and Seeding.

111_25
10/20/26

INDEX OF TABULATIONS

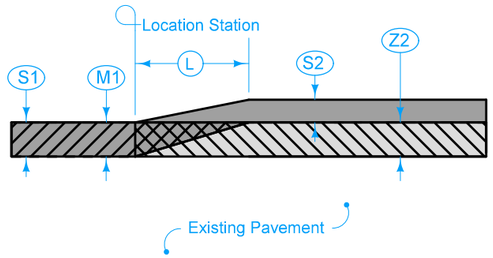
Tabulation	Tabulation Title	Sheet No.
111_25	INDEX OF TABULATIONS	RC.4
105_04	STANDARD ROAD PLANS	RC.5

105_04
10/20/26

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices



TYPE 'R5-M1'
RUNOUT FOR TRANSITION
FROM - SURFACE COURSE TO
HOT IN-PLACE RECYCLING - SURFACE COURSE

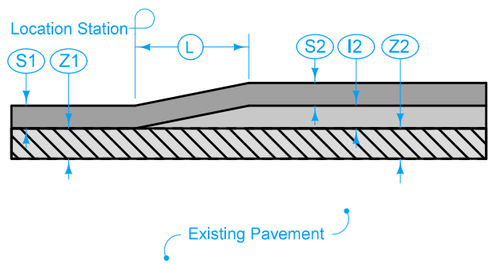
- S# HMA Surface Course
- I# HMA Intermediate Course
- Z# Hot In-Place Recycling
- M# Milling
- L Runout Length

Posted Speed Limit (mph)	Runout Ratio (ft per inch)
Over 40	50
20 to 40	25
Under 20	10*

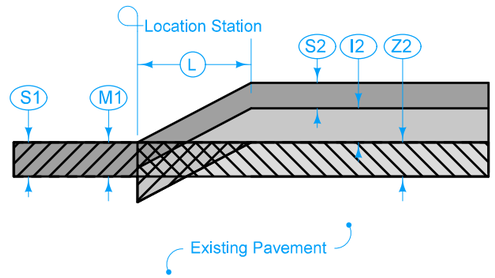
* Based on turning maneuvers at side roads and intersections.

Contract Item:
Pavement Scarification

Tabulations:
100-25
102-16



TYPE 'R5-M2'
RUNOUT FOR TRANSITION
FROM HOT IN-PLACE RECYCLING - SURFACE COURSE TO
HOT IN-PLACE RECYCLING - INTERMEDIATE COURSE - SURFACE COURSE



TYPE 'R5-M3'
RUNOUT FOR TRANSITION
FROM - SURFACE COURSE TO
HOT IN-PLACE RECYCLING - INTERMEDIATE COURSE - SURFACE COURSE

MODIFIED

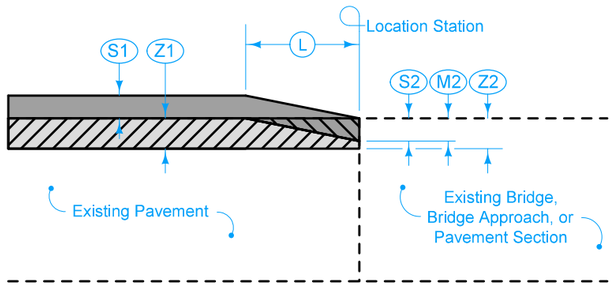
MODIFICATIONS: Created Runouts 'R5-M1', 'R5-M2', and 'R5-M3'.
Removed runouts not applicable to this project.

RUNOUTS FOR RESURFACING

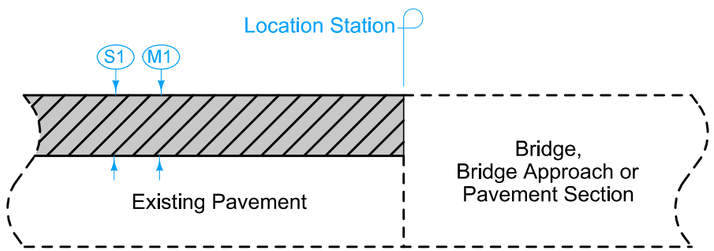
PR-201 SHEET 1 of 1

FILE NO.	ENGLISH	DESIGN TEAM **SCHROCK / MCNAMARA / INGRAM**	**WAPELLO/MAHASKA/KEOKUK** COUNTY	PROJECT NUMBER **STP-149-1(100)--2C-90**	SHEET NUMBER **U.1**

1:10:23 PM 9/29/2026 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9014901024\Design\CADD_Files\Sheet_Files\SHT_90149100Z12_U01.dgn



TYPE 'N1-M1'
SURFACE NOTCH - HOT IN-PLACE RECYCLING
RUNOUT FOR SINGLE COURSE RESURFACING



TYPE 'N2-M1'
SINGLE COURSE
RESURFACING OF MILLED AREAS

- (S#) HMA Surface Course
- (I#) HMA Intermediate Course
- (Z#) Hot In-Place Recycling
- (M#) Milling
- (L) Runout Length

Posted Speed Limit (mph)	Runout Ratio (ft per inch)
Over 40	50
20 to 40	25
Under 20	10*

* Based on turning maneuvers at side roads and intersections.

Contract Item:
Pavement Scarification

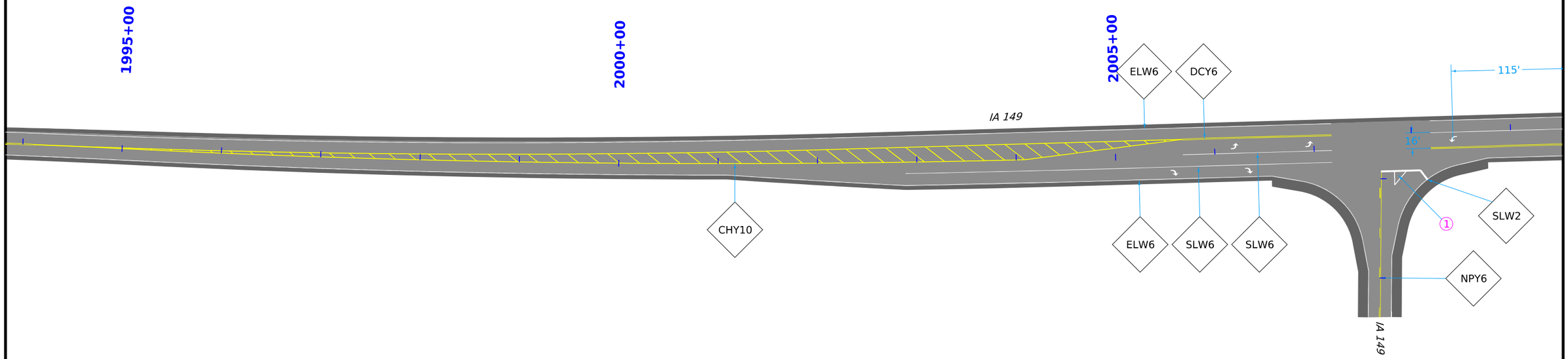
Tabulations:
100-25
102-16

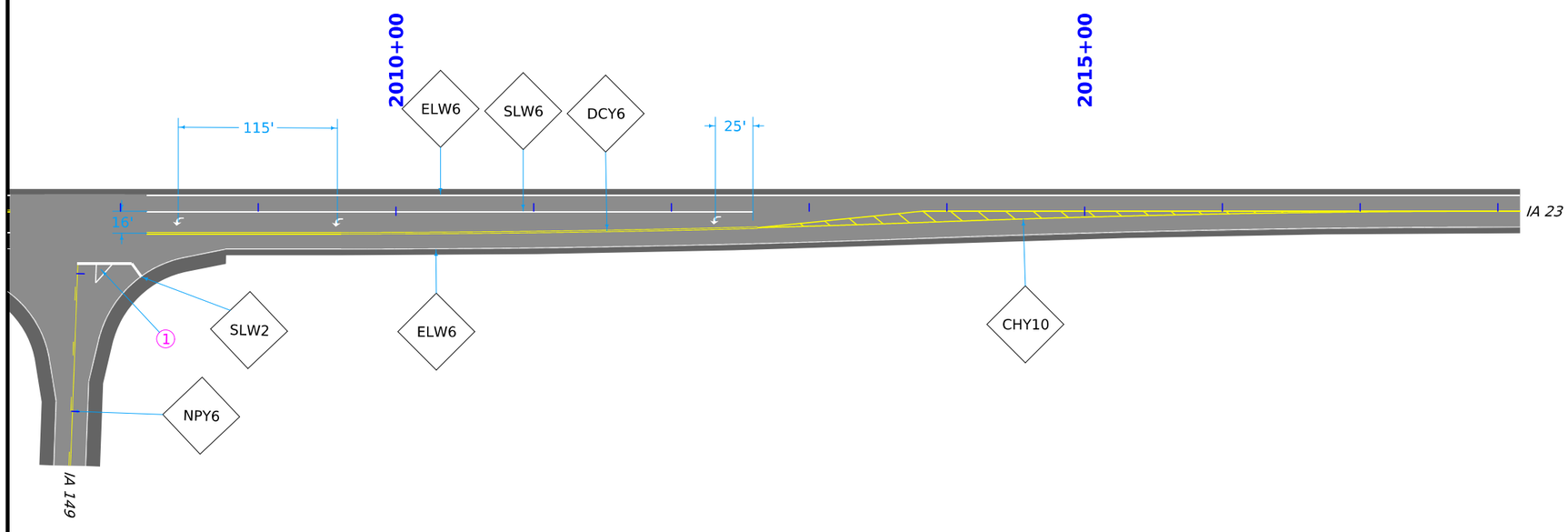
MODIFIED

MODIFICATIONS: Created Notches 'N1-M1', and 'N2-M1'.
Removed notches not applicable to this project.

NOTCHES FOR RESURFACING (WITH OR WITHOUT RUNOUT)

PR-202 SHEET 1 of 1





1 Refer to PM-120 and Design Detail 560-5 for Painted Island Information.
Refer to PM-110 for Line Types and PM-111 for Symbols and Legends

Refer to PM-521 and PM-522 for other details not shown.

Refer to Tab. 108-22 and 108-29 for quantities.

IA 149 and IA 23 Intersection Pavement Markings Layout

FILE NO.	ENGLISH	DESIGN TEAM SCHROCK / MCNAMARA / INGRAM	WAPELLO/MAHASKA/KEOKUK COUNTY	PROJECT NUMBER STP-149-1(100)--2C-90	SHEET NUMBER U.3

1:10:30 PM 9/29/2026 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9014901024\Design\CADD_Files\Sheet_Files\SHT_90149100Z12_U02.dgn